



November 2, 2020

Ms. Kimberly Tisa, PCB Coordinator
U.S. Environmental Protection Agency Region 1
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3912

Re: Long-Term Monitoring and Maintenance Implementation – 2020 Monitoring Results
University of Massachusetts, Amherst, Massachusetts

Dear Ms. Tisa:

On behalf of the University of Massachusetts, this report has been prepared and is being submitted to document the results from the 2020 long term monitoring activities conducted at the following buildings on the University of Massachusetts Amherst Campus:

- Tobin Hall Deck – The Monitoring and Maintenance Implementation Plan (MMIP) was submitted on March 13, 2012 in accordance with Condition 8 of the United States Environmental Protection Agency's (EPA) PCB Risk-Based Decontamination and Disposal Approval dated February 28, 2012; modifications were made to the long-term monitoring requirements following the 2015 event and communications with EPA to include annual visual inspections and biennial wipe testing of encapsulated surfaces.
- Southwest Concourse – The MMIP was submitted on December 29, 2010 in accordance with Condition 13 of the EPA's Southwest Residential Area Concourse PCB Cleanup and Disposal Approval dated August 30, 2010; monitoring activities were also conducted at those areas described in the PCB Remediation Plan Amendment dated May 9, 2011 and along the east side of the Patterson and MacKimmie Houses as described in the PCB Remediation Plan dated May 15, 2017; following the 2015 monitoring event and communications with EPA, modifications were made to the long-term monitoring requirements to include visual inspections on an annual basis and wipe testing of encapsulated surfaces on a biennial basis.
- Dubois Library Elevator Lobbies – The MMIP was submitted on March 29, 2013 in accordance with Condition 12 of the EPA's Dubois Library PCB Cleanup and Disposal Approval dated April 8, 2010; following the 2015 monitoring event and communications with EPA, modifications to the long-term monitoring were made to include visual inspections and indoor air sampling on an annual basis and wipe testing of encapsulated surfaces on a biennial basis.
- Orchard Hill Complex:
 - Webster House – The MMIP was submitted on January 5, 2012 in accordance with Condition 16 of the EPA's PCB Decontamination and Disposal Approval dated July 4, 2011; following completion of the 2015 monitoring event and communications with EPA, the long-term monitoring program was modified to include annual visual inspections and biennial wipe testing of encapsulated surfaces as well as a single round of post-abatement indoor air sampling to confirm site conditions, which was conducted in 2016.



- Field and Grayson Houses – The MMIP was submitted on January 13, 2014 in accordance with Condition 17 of the EPA’s April 30, 2012 PCB Decontamination and Disposal Approval for the window/door replacement project; monitoring activities were also conducted in accordance with the MMIP for the work completed on the exterior joints submitted on April 24, 2012 as part of the PCB Remediation Plan/Close Out Document for Field and Grayson House; following completion of the 2015 monitoring event and communications with EPA, the long-term monitoring program was modified to include annual visual inspections and biennial wipe testing of encapsulated surfaces as well as a single round of post-abatement indoor air sampling to confirm site conditions, which was conducted in 2016.
- Sylvan Complex – The MMIP was submitted on February 20, 2014 as part of the remediation completion reporting for the exterior and interior renovations conducted at each of the three buildings within the Sylvan Complex (Brown, Cashin, and McNamara). Annual post-remediation monitoring has been conducted in accordance with the MMIP and additional communications with EPA since 2014. Following completion of the 2017 monitoring event, the long-term monitoring program was modified to include visual inspections and wipe testing of encapsulated surfaces on a biennial basis. In addition, indoor air monitoring is being conducted in interior areas where residual PCBs were encapsulated. On June 4, 2019, EPA issued the PCB Decontamination and Disposal Approval for the Sylvan Complex which included continued long-term monitoring of encapsulated surfaces.
- Physical Plant Second Floor – The MMIP was submitted on December 16, 2013 in accordance with Condition 15 of EPA’s October 19, 2012 PCB Decontamination and Disposal Approval for the replacement of windows in Room 230A within the Physical Plant building. Long-term monitoring activities include visual inspections to be conducted on an annual basis.

As previously discussed, the activities conducted in support of the monitoring and maintenance activities for these projects are being submitted under a single cover to streamline reporting and review of these activities. The locations of these areas are depicted on Figure 1.

An overall summary of the 2020 activities is provided below with details of the specific projects included in individual project reports provided as attachments to this letter.

MONITORING AND MAINTENANCE IMPLEMENTATION PLAN

For each of the projects included in this report, certain building materials formerly in direct contact with or adjacent to former PCB caulking were encapsulated using liquid coatings and/or physical barriers (e.g., sheet metal cladding) as a risk-based management approach under 40 CFR 761.61(c) where it was determined that physical removal was an infeasible remedial approach. This included both porous masonry and concrete surfaces in former direct contact with the caulking as well as a limited extent of masonry and concrete beyond the former joints.

Components of each MMIP, including subsequent revisions based on the monitoring results and maintenance activities completed to date, include the following:

- Visual inspections of the encapsulated surfaces will be performed to look for signs of encapsulant deterioration, breakages, wear, and/or signs of weathering or disturbance of the replacement caulking or other secondary physical barriers.



- Surface wipe samples of the encapsulated surfaces will be collected using a hexane-soaked wipe following the standard wipe test procedures described in 40 CFR 761.123.
- Indoor air monitoring will be conducted in accordance with US EPA Compendium Method TO-10A "Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detections (GC/MD)".
- Monitoring results will be compared to evaluation criteria to determine the need and type of corrective actions and/or continued monitoring.
- A monitoring report will be prepared and submitted to EPA to document the results of the visual inspections and sampling activities, as well as to provide any recommendations for corrective measures based on the results of the visual inspections or laboratory analytical results. The report will also include a statement on the continued effectiveness of the encapsulants and/or secondary physical barriers; and will include any proposed modifications to the MMIP.

MONITORING ACTIVITIES –2020

Woodard & Curran performed the following monitoring activities between July and August 2020:

- Visual inspections of encapsulated surfaces were conducted at each of the six areas identified for long-term monitoring;
- Surface wipe sampling of encapsulated surfaces was conducted on the encapsulated surfaces at the Sylvan Complex;
- Indoor air samples were collected from the elevator lobbies of the Dubois Library.
- UMass designated the Sylvan buildings to remain vacant for the fall semester due to the University's Covid-19 protocols and campus plans. Because the intent of the air sampling program at these buildings is to evaluate indoor air conditions as they relate to potential occupant exposures (and there are no occupants in the building), indoor air sampling was not conducted in 2020.

RESULTS

A summary of the results of the 2020 monitoring activities for each building is included in Attachments 1 through 6 to this letter. Complete analytical laboratory reports, along with data validation summaries, are provided in Attachment 7.

The 2020 inspection and sampling results indicate that the liquid coatings and secondary barriers continue to be effective containment barriers to residual concentrations of PCBs in the masonry and concrete. Based on information provided by UMass, no work or maintenance activities were conducted in the subject areas.

The results from surface wipe samples collected from encapsulated surfaces at the Sylvan Complex were consistent with previous sampling events with PCBs reported as either non-detect or < 1 ug/100cm².



The results from the indoor air sampling at the Dubois Library indicated that the concentrations of PCBs were below the calculated site-specific exposure level. Consistent with the 2019 sampling event, results from samples collected on the 19th and 23rd floors were higher than results from event prior to 2019; however, at both locations, the 2020 results were lower than those reported in 2019.

Corrective Measures

Based on the results of the annual monitoring, no corrective measures are proposed to be conducted. However, as reported in previous annual reports, UMass continues to evaluate the application of secondary barrier systems over those vertical control joints considered to be in the high occupancy area as defined specific to this project (< 8' 8" above ground surface) at the McNamara building. At this time, the final product has not been determined however, it is anticipated that it will a pre-formed silicone barrier material or similar barrier material designed to span the control joint.

Continued Monitoring

It is proposed to continue the campus wide long-term monitoring as per the applicable MMIPs with revisions for each area to include annual visual inspections and indoor air sampling (where applicable) and biennial surface wipe sampling.

If you have any comments, questions, or require further information, please do not hesitate to e-mail or call me at the number listed above.

Sincerely,

WOODARD & CURRAN INC.

George J. Franklin, CHMM
Technical Manager

Jeffrey A. Hamel, LSP, LEP
Senior Principal

cc: Terri Wolejko, UMass EH&S

Enclosures: Figure 1 – Site Location Map
Attachment 1 – Tobin Hall Deck
Attachment 2 – Southwest Concourse
Attachment 3 – Dubois Library Elevator Lobbies
Attachment 4 – Orchard Hill Residential Complex
Attachment 5 – Sylvan Residential Complex
Attachment 6 – Physical Plant
Attachment 7 – Data Validation Summary and Analytical Laboratory Reports



University of Massachusetts Amherst Campus Map

July 2011

University Switchboard - (413) 545-0111

Tour Service - (413) 545-4237

Robsham Memorial Visitors Center - (413) 545-0306

Map Key

- 31 Numbered Parking Lots
- P Metered/Public Parking
- ▲ PVTA Bus Stops
- ✕ Traffic Lights

0 500 1,000 Feet



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Figure 1 Site Location Map



Attachment 1 – Tobin Hall Deck

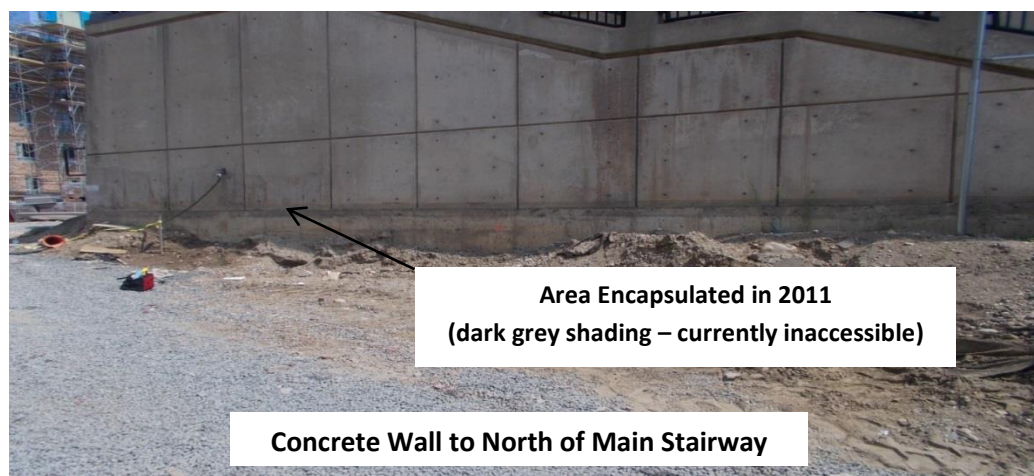
Attachment 1 – Tobin Hall
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst

Location: Tobin Hall

Summary of Remedial Areas

In-Place Management: Residual PCBs on a building wall are being managed in-place following removal of concrete decking on the west side of Tobin Hall in 2011 and concrete stairs/landing in 2012. Concrete materials that contain PCBs at concentrations > 1 parts per million (ppm) remain beneath a liquid encapsulating coating (residual PCB concentration in concrete reported at a concentration of 2.37 ppm). The encapsulation extends to a distance of six inches above and six inches below the former caulked joint along approximately 80 linear feet (l.f.) of the Tobin Hall building wall and along approximately seven l.f. of the concrete façade/pillar at the north and south ends of the stairway landing. Materials were encapsulated with two coats of clear Sikagard 670W acrylic coating or two coats of Sikagard 62 liquid epoxy coating (south end of the stairwell landing only). The locations of the encapsulated surfaces are depicted on Figure 1-1. In 2013, as part of the Commonwealth Honors College construction project, a four-foot-high retaining wall was installed over the majority of the encapsulated surfaces. As a result, the remaining exposed encapsulated concrete surface is limited to a total of approximately 3.5 square feet of concrete at the northern and southern ends of the stair landing (i.e., seven feet of former joint to a distance of six inches above the former joints).

Photos depicting the encapsulated surfaces are presented below.



Northern Side of Stair Landing

**Attachment 1 – Tobin Hall
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Baseline Verification Data Summary: Two initial baseline wipe samples were collected in August 2011 from the building wall encapsulated with Sikagard 670W clear acrylic coating as part of the decking removal project. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in both samples. One baseline wipe sample was collected from the epoxy coated concrete surfaces as part of the stair landing removal project in 2012. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$).

Monitoring and Maintenance Implementation Plan

The Monitoring and Maintenance Implementation Plan (MMIP) was submitted to the United States Environmental Protection Agency (EPA) in March 2012 and modified following the 2015 monitoring event and subsequent email communications with EPA. Beginning with the 2016 monitoring event, long term monitoring includes annual visual inspections and biennial wipe sampling of the accessible encapsulated surfaces (one from the northern portion of the wall and one from the southern portion of the wall). Wipe samples will be collected using a hexane-soaked wipe following the standard wipe test procedures described in 40 CFR 761.123 over a 100-square centimeter surface area.

Monitoring Activities – Previous Events

Between 2012 and 2019 annual visual inspections of encapsulated surfaces indicated that the coatings on accessible portions of the encapsulated surfaces remained in good physical condition with the exception of a small, isolated area of epoxy coating deterioration directly adjacent to a hose connection on the northern retaining wall (the area was subsequently covered in 2013 with the installation of a four foot high retaining wall) and some flaking and peeling of the Sikagard 670W clear coating applied to a limited portion of the concrete on the northern retaining wall. Based on the observed flaking and peeling, in 2017 UMass applied two coats of Sikagard 62 epoxy coating to the accessible portion of the northern retaining wall where the clear coating had been observed to be flaking and peeling during previous events.

Wipe samples collected on an annual basis between 2012 and 2017 and on a biennial basis starting in 2019 from encapsulated surfaces indicated that PCBs were non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).

Monitoring Activities – August 2020

Results of visual inspections indicated that the epoxy coatings on accessible portions of the retaining walls were in good physical condition.

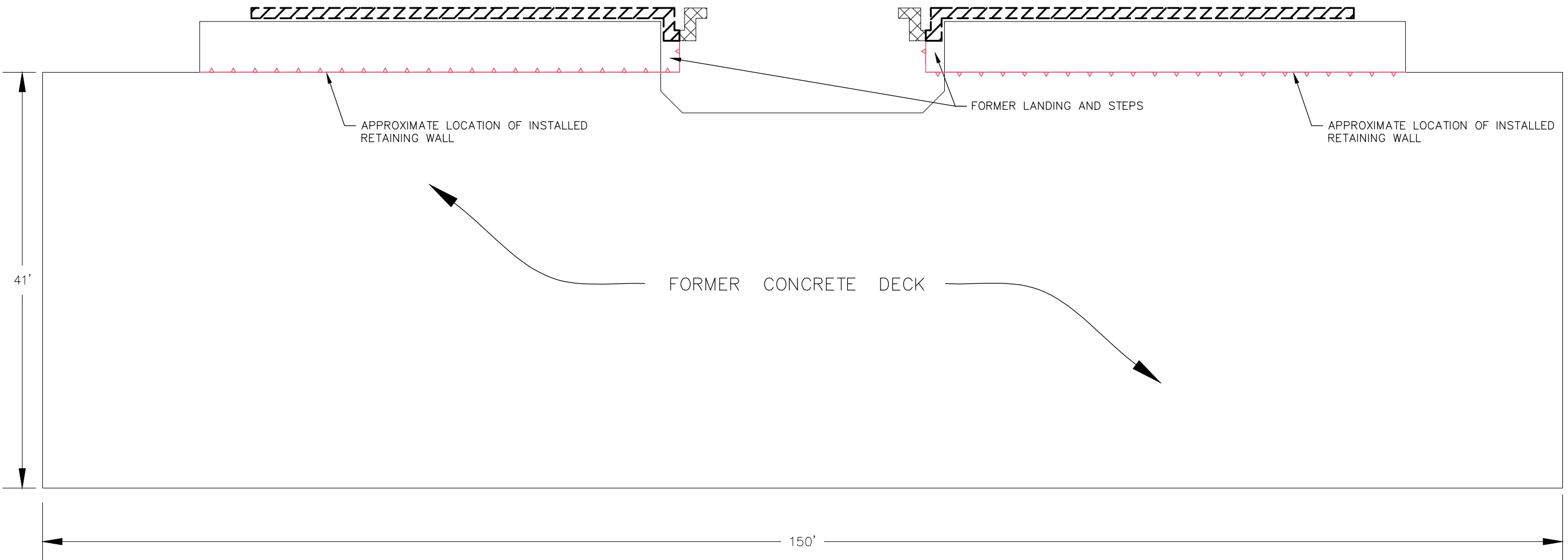
Next Monitoring Event

The next monitoring event is scheduled for July 2021 to include annual visual inspections and wipe sampling.

\\woodardcurran.net\shared\Projects\225695 UMasa Amherst - Long Term Monitoring\dwg\Drawings\2016\225996-LTM-tobin-Figure 1-REV1.dwg



TOBIN HALL



LEGEND



AREA OF TOBIN HALL CONCRETE ENCAPSULATION CURRENTLY INACCESSIBLE DUE TO INSTALLATION OF RETAINING WALL AND PLANTING BED (ENCAPSULATION APPLIED TO A DISTANCE OF 6" ABOVE AND BELOW THE FORMER CAULKED JOINT).



AREA OF TOBIN HALL CONCRETE ENCAPSULATION TO A DISTANCE OF 6" ABOVE AND 6" BELOW CAULKED JOINT CURRENTLY ACCESSIBLE AT LOCATIONS ABOVE THE FORMER JOINT.



BAR SCALE
3/32" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

ENCAPSULATED BUILDING SURFACES

UNIVERSITY OF MASSACHUSETTS
AMHERST, MASSACHUSETTS

2020 Long Term Monitoring Report

JOB NO: 225695
DATE: DECEMBER 2016
SCALE: AS NOTED

Figure 1-1



40 Shattuck Road, Suite 110
Andover, Massachusetts 01810
866.702.6371 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS



Attachment 2 – Southwest Concourse

**Attachment 2 – Southwest Concourse Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Location: Southwest Concourse Area

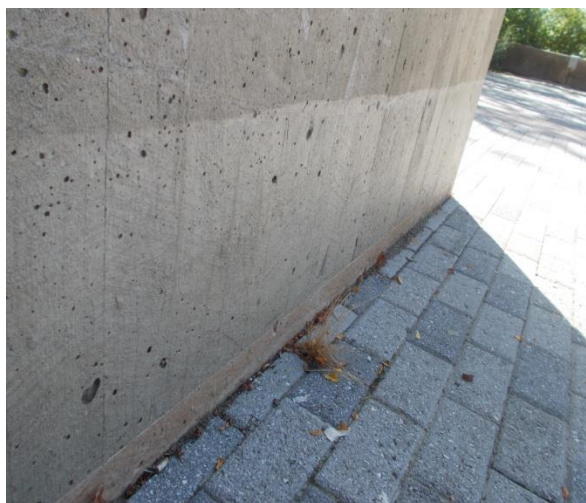
Areas: Hampshire Plaza, Berkshire Plaza, Washington Plaza, MacKimmie House/Stonewall Center, and Patterson House

Summary of Remedial Areas

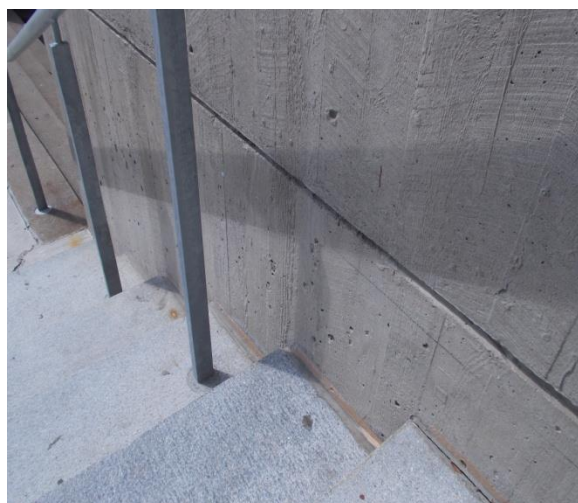
In-Place Management: Residual PCBs at concentrations > 1 part per million (ppm) on exterior building walls and retaining walls are being managed in place following removal of caulking, soils, and concrete decking along retaining walls and ground level structures throughout the Southwest Concourse Area as follows:

- Retaining Walls and Ground Level Structures (maximum residual PCB concentrations in concrete was 292 ppm):
 - Planned Sub-grade areas – Concrete materials formerly in direct contact with the caulked joint, to a minimum distance of 12 inches below the caulked joint, and to a distance equivalent to the planned final finished grade above the caulked joint (if the final grade was above the former caulked joint) were encapsulated with two coats of tan Sikagard 62 colored epoxy; and
 - Planned Above-grade areas – Concrete materials to a minimum distance of 12 inches above the caulked joint or planned finished grade were encapsulated with two coats of clear Sikagard 670W acrylic coating.
- Concrete Ceiling of Pedestrian Tunnel (maximum residual PCB concentration in masonry was 309 ppm) – Concrete materials formerly in direct contact with the caulking and to a lateral distance of 12 inches from the caulked joint were encapsulated with two coats of tan Sikagard 62 epoxy coating. Following application of the epoxy, a new bead of caulking was installed within the joint and a final topcoat of a white elastomeric acrylic coating was applied to the entire tunnel ceiling.

The locations of the encapsulated surfaces are depicted on Figure 2-1 and typical applications are shown in the photos below.



Typical Retaining Wall Application



**Typical Stair Application
(shadow from railing visible as dark area)**

**Attachment 2 – Southwest Concourse Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Baseline Verification Data Summary: Initial baseline wipe samples were collected in July and August 2010 (majority of the Southwest Concourse Area), in July and August 2011 (areas included in the PCB Remediation Plan Amendment), and in June 2017 (Patterson and MacKimmie Houses). A summary of analytical results from the baseline sampling is as follows:

- Sikagard 62 Epoxy Encapsulated Surfaces – 69 of 71 samples were reported as non-detect (the two samples of former direct contact materials in the pedestrian tunnel reported PCBs at concentrations of 7.16 and 24 $\mu\text{g}/100\text{ cm}^2$; however, these areas were subsequently covered with a new bead of caulking and a final acrylic coating).
- Sikagard 670W Acrylic Coating Encapsulated Surfaces – 64 of 64 samples collected from above grade locations were reported as non-detect ($< 1.0\text{ }\mu\text{g}/100\text{ cm}^2$).
- Encapsulated Concrete Building Foundations (July/August 2011 and June 2017) – 6 of 7 samples collected at grade (both epoxy and clear coated surfaces) were reported as non-detect and one sample reported at a concentration of 4 $\mu\text{g}/100\text{ cm}^2$; however, materials in this area were recoated and results from the follow-up wipe samples indicated PCBs were non-detect ($< 1.0\text{ }\mu\text{g}/100\text{ cm}^2$).

Monitoring and Maintenance Implementation Plan

The Monitoring and Maintenance Implementation Plan (MMIP) was submitted to the United States Environmental Protection Agency (EPA) in December 2010 with a final response to comments on the plan submitted in January 2011. Revisions to the plan were implemented following the 2015 monitoring event and subsequent communications with EPA. The MMIP includes visual inspections of encapsulated surfaces on an annual basis with wipe sampling conducted on a bi-annual basis. A summary of the inspection and monitoring requirements is provided below.

Long term monitoring wipe sampling for each of the encapsulated surfaces will be conducted using a hexane-soaked wipe following the standard wipe test procedures described in 40 CFR 761.123. Samples will be collected on a biennial basis as follows:

- Concrete Structures (retaining walls and ground surface structures):
 - Sub-grade areas (Sikagard 62 epoxy) – Given the inaccessibility to these areas and that all 69 baseline wipe samples were non-detect for PCBs, no long-term monitoring samples were proposed from these areas. However, due to modifications to the final site grade during construction, areas encapsulated with the Sikagard 62 liquid epoxy coating remain visible above grade over select portions of the Southwest Concourse. As such, both visual inspections of the epoxy coating and collection of verification wipe samples are being conducted similar to the planned above grade areas (eight wipe samples); and
 - Above-grade areas (Sikagard 670W acrylic) – Nine wipe samples from randomly selected locations throughout the concourse area are to be collected. One sample will be collected from each type of concrete structure (retaining walls, building walls, walls along stairs) within each of the three major subdivisions of the concourse area (Hampshire Plaza, Berkshire Plaza, and Washington Plaza).
- Concrete Ceiling of the Pedestrian Tunnel – Two wipe samples will be collected from materials within the tunnel as follows:
 - One sample from the new caulking; and
 - One sample from the adjacent coated concrete.

**Attachment 2 – Southwest Concourse Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Previous Monitoring Activities – 2012 through 2019

Long term monitoring was conducted on an annual basis from 2012 through 2019. Results of the monitoring were presented to EPA in the annual monitoring reports and are summarized below.

Visual Inspection: Results of the visual inspections found no evidence of significant peeling, breakage, or brittleness of the epoxy coating; however, isolated areas of damage were observed and repaired as needed overtime. The visual inspections of the Sikagard 670W clear acrylic coating identified areas of flaking and peeling across the concourse typically isolated to areas 4 to 6 inches in size. The areas of flaking and peeling remained relatively consistent between sampling events indicating that the issues may have been present at the time of application and not indicative of long-term wear of the coatings. The coatings on the ceiling of the pedestrian tunnel were observed to be in good physical condition with no observed signs of deterioration.

Wipe Samples: Wipe samples were collected from concrete surfaces coated with the Sikagard 62 liquid epoxy coating and the Sikagard 670W clear acrylic coating in the Southwest Concourse area and from coated surfaces in the pedestrian tunnel. Following the 2015 monitoring event, the collection of surface wipe samples was transitioned to a biennial event. A summary of the samples collected is as follows:

- Sikagard 62 Liquid Epoxy: Analytical results indicated that PCBs were either non-detect or present at concentrations $< 1 \mu\text{g}/100 \text{ cm}^2$ during each event with the exception of samples collected from the Washington Plaza stairs where PCBs were reported at concentrations $> 1 \mu\text{g}/100 \text{ cm}^2$ during the 2012, 2013, and 2015 monitoring events. Based on these results, an additional coating of Sikagard 62 was applied to the subject stair surfaces in 2017 and results from wipe samples collected in 2017 and 2019 reported PCBs at concentrations of $0.51 \text{ ug}/100\text{cm}^2$ and $0.33 \text{ ug}/100\text{cm}^2$, respectively
- Sikagard 670W: Analytical results indicated that PCBs were all non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) or $< 1 \mu\text{g}/100\text{cm}^2$ in all samples collected through the 2019 event, including multiple samples collected from the areas of isolated flaking and peeling.
- Concrete Ceiling of Pedestrian Tunnel: Analytical results indicated that PCBs were non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) to $0.56 \text{ ug}/100\text{cm}^2$ in samples collected from coated concrete and continue to be detected at concentrations $> 1 \text{ ug}/100\text{cm}^2$ in samples collected from the surface of the caulked joint (with a maximum reported concentration of $13.4 \text{ ug}/100\text{cm}^2$ in 2017).

Monitoring Activities – 2020

The 2020 monitoring event was conducted on July 31, 2020 and included visual inspections of the liquid coatings. A summary of the results is as follows:

Visual Inspection: Results of the visual inspections are as follows:

- Sikagard 62 Epoxy: The coatings were observed to be in good physical condition. Additional isolated areas of damage were observed on retaining walls in Berkshire Plaza and Hampshire Plaza.
- Sikagard 670W Acrylic: Visual inspection of the clear acrylic coating indicated that the coating remains in good condition over much of the encapsulated surfaces however, some new areas of observed flaking and peeling were observed within Berkshire Plaza and Hampshire Plaza. The observed flaking and peeling were consistent with other areas described above.
- Concrete Ceiling of Pedestrian Tunnel: Visual inspection of the paint and caulking within the joint indicated the materials remain in good condition.
- The locations of the encapsulated surfaces and areas of observed damage or flaking and peeling are presented on Figure 2-1.

**Attachment 2 – Southwest Concourse Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

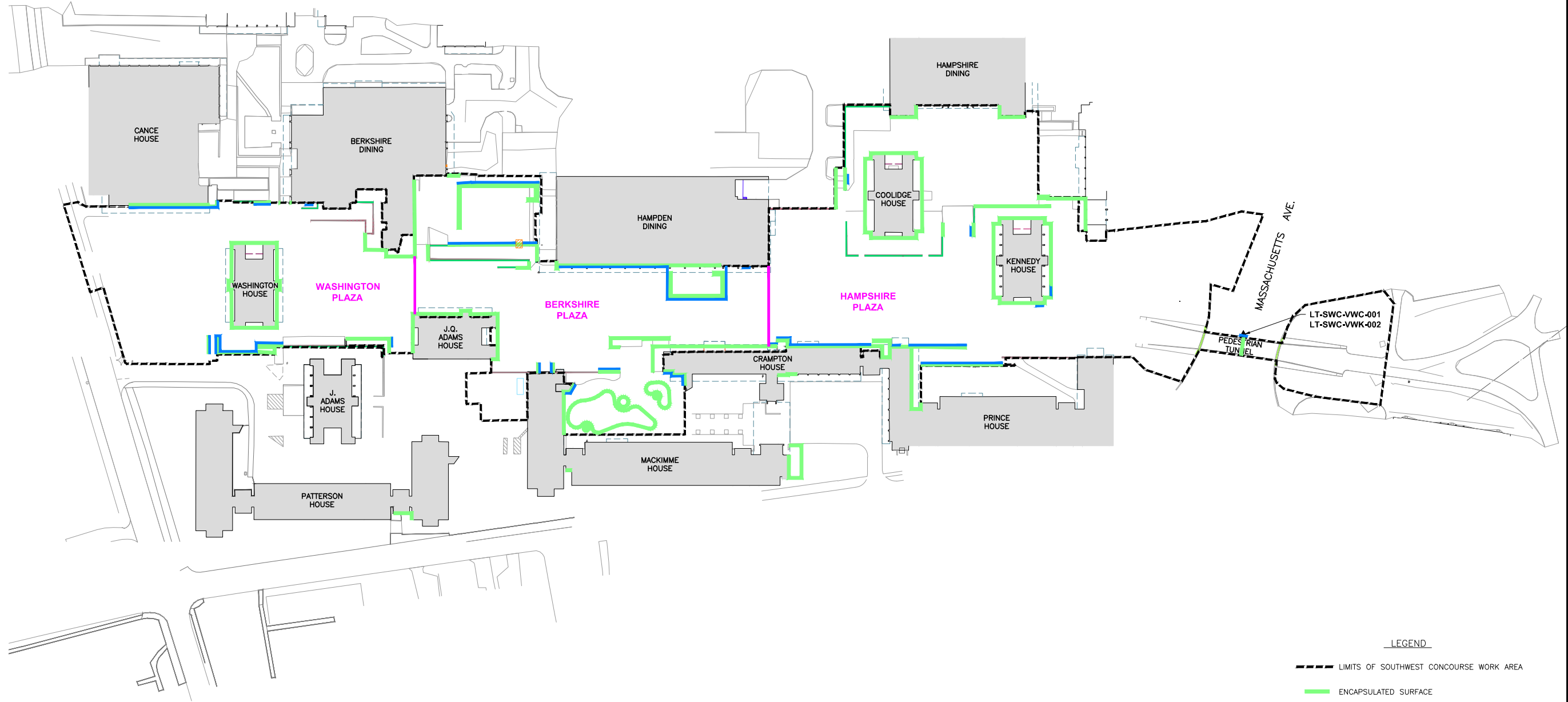
Conclusions/Next Steps

Based on these results, the liquid coatings applied to concrete surfaces within the Southwest Concourse continue to be effective in encapsulating residual PCBs in masonry. Minor damage to the epoxy coating was observed in Berkshire Plaza and Hampshire Plaza. Repairs to the epoxy will continue to be made as part of routine maintenance activities within the concourse.

Next Monitoring Event

The next monitoring event will be performed during the Summer of 2021 and will include visual inspections of coated surfaces and wipe sampling in accordance with the MMIP.

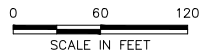
\\woodardcurran.net\shared\Projects\225695 - Long Term Monitoring\wp\Drawings\2018\225695-2018-Figure-2-1.dwg, Oct 25, 2018 - 2:59pm



LEGEND

- LIMITS OF SOUTHWEST CONCOURSE WORK AREA
- ENCAPSULATED SURFACE
- OBSERVED IN 2017 AND 2018 LOCATION OF SIKAGARD 62 LIQUID EPOXY DAMAGE
- CONCRETE SURFACES WITH OBSERVED ISOLATED OR LIMITED AREAS OF DETERIORATION OF SIKAGARD 670W CLEAR ACRYLIC COATING; DETERIORATION WAS NOT OBSERVED OVER THE ENTIRE AREA IDENTIFIED AND HAS REMAINED RELATIVELY CONSISTENT SINCE 2012.

LT-SWC-VWC-001 ▲ VERIFICATION WIPE SAMPLE LOCATION AND IDENTIFIER



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AREAS OF ENCAPSULATED SURFACES

UNIVERSITY OF MASSACHUSETTS
AMHERST, MASSACHUSETTS

Southwest Concourse MMIP
Report - 2020

JOB NO.: 225695.02
DATE: NOVEMBER 2018
SCALE: AS NOTED
SHEET: 1 OF 1

FIGURE 2-1

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DESIGNED BY:	GSR	225695-2018-Figure-2-1.dwg	
DRAWN BY:	PF		



Attachment 3 – Dubois Library Elevator Lobbies

**Attachment 3 – Dubois Library
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

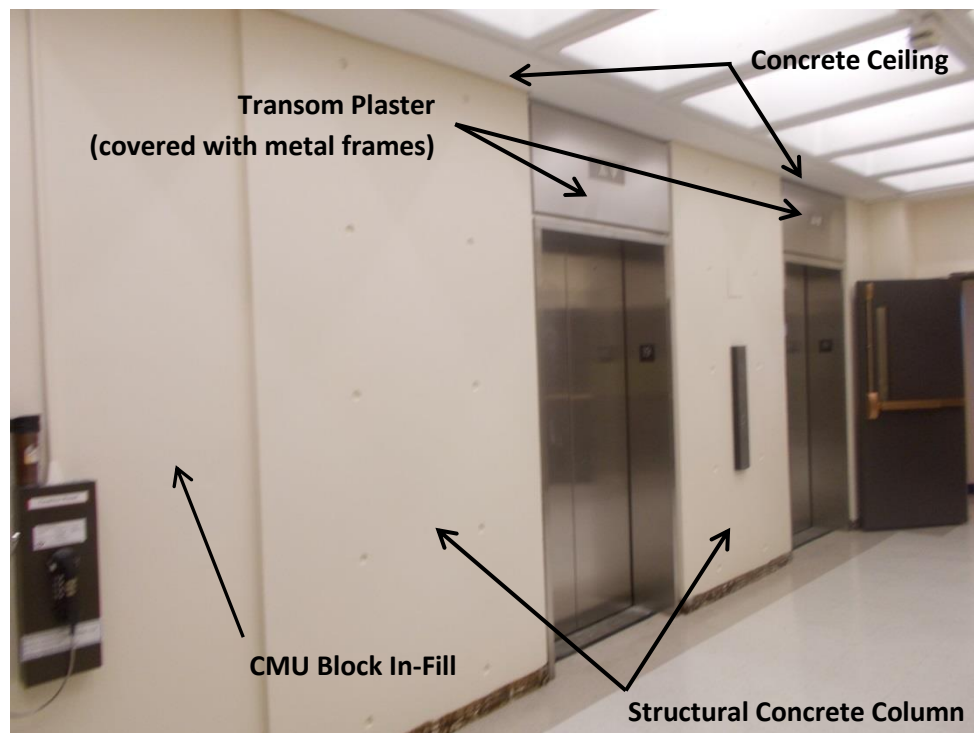
Location: W.E.B Dubois Library

Summary of Remedial Areas

In-Place Management: Residual PCBs at concentrations > 1 part per million (ppm) are being managed in place following abatement activities at the following locations located within the elevator lobbies:

- CMU Block In-Fill Materials – All CMU block in-fill materials were encapsulated with Sika 550W acrylic coating followed by a final coat of interior latex paint.
- Transom Plaster – Plaster materials throughout the elevator lobbies were encapsulated with Sika 550W acrylic coating followed by a final coat of interior latex paint. Metal cladding was installed over the encapsulated transom plaster materials in accordance with the project specifications.
- Concrete Ceiling – Concrete materials formerly in direct contact with the caulking and out to the corner of the concrete ceiling (or within 12 inches of the caulked joint) were encapsulated with Sika 550W acrylic coating followed by a final coat of interior latex paint. All remaining elevator lobby ceiling materials beyond the corner were covered with latex paint.
- Structural Concrete Columns – Concrete materials formerly in direct contact with the caulking and out to the first 90-degree angle (or within approximately 2 inches of the caulked joint) were encapsulated with Sika 550W acrylic coating followed by a final coat of interior latex paint. Portions of the elevator door recesses were also covered with metal frames associated with the new elevator doors. All materials on the face of the structural concrete column beyond the corner were encapsulated with latex paint.

The encapsulated surfaces associated with the elevator lobby abatement activities are shown in the photo below.



**Attachment 3 – Dubois Library
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Baseline Verification Wipe Data Summary: Initial baseline wipes were collected on August 28, 2012. A summary of analytical results from the baseline sampling is as follows:

- CMU Block In-Fill materials: Three verification wipes samples were collected from CMU block in-fill surfaces following the application of the Sika 550W acrylic coating followed by a latex coating. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in the three wipes samples.
- Transom Plaster: One verification wipe sample was collected from transom plaster surfaces following the application of the Sika 550W acrylic coating followed by a latex coating. Analytical results indicated that PCBs were present below $1 \mu\text{g}/100 \text{ cm}^2$ with a reported concentration of $0.72 \mu\text{g}/100 \text{ cm}^2$.
- Concrete Ceiling: One verification wipe sample was collected from concrete ceiling surfaces following the application of the Sika 550W acrylic coating followed by a latex coating. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$).
- Structural Concrete Columns – Three wipe samples were collected from encapsulated structural concrete materials following the application of the Sika 550W acrylic coating followed by a latex coating. Two wipe samples were collected from the parallel face of the structural concrete (facing the lobby) at a distance of 10 inches from the former caulked joint. Analytical results from these two samples indicated that PCBs were non-detected ($< 0.20 \mu\text{g}/100 \text{ cm}^2$). One sample was collected at a distance of two inches from the former caulked joint along the perpendicular face of the structural concrete (i.e., within the elevator recess). Analytical results indicated that PCBs were present at a concentration of $4.6 \mu\text{g}/100 \text{ cm}^2$ in this sample.

Indoor Air Sampling Data Summary: Indoor air samples were collected on August 28, 2012 as part of the initial post-remediation sampling. Analytical results indicated that PCBs were present at concentrations of 690, 977, and $1,146 \text{ ng}/\text{m}^3$ in the three samples collected. These results were within the range of EPA's published guidance for indoor air levels for schools and a risk-based project specific action level prepared for the transitory nature of the elevator lobby.

As part of the development of the Monitoring and Maintenance Implementation Plan (MMIP) and to gain an understanding of indoor air levels in the different floors of the library as well as over the different seasons to assess variations over time, an expanded indoor air sampling program, which including the collection of samples from nine lobby areas, was developed and implemented on October 16, 2012.

Monitoring and Maintenance Implementation Plan

The MMIP was submitted to the United States Environmental Protection Agency (EPA) in March 2013 and included visual inspections of encapsulated surfaces, verification wipe sampling, and continued indoor air sampling. Following the 2015 monitoring event, the plan was modified to include annual visual inspections and indoor air sampling and biennial surface wipe sampling. A summary of the inspection and monitoring requirements is as follows:

Long-term Monitoring Wipe Sampling: Wipe samples of the encapsulated surfaces will be collected using a hexane-soaked wipe following the standard wipe test procedures described in 40 CFR 761.123. A total of seven samples will be collected on a biennial basis from randomly selected locations as follows:

- CMU Block In-Fill Materials – Three wipe samples will be collected from encapsulated masonry block in-fills on three randomly selected floors. The location of the wipe sample on the in-fill will be randomly selected using a random number generator based on the total height and width of the in-fill.
- Structural Concrete/Lobby Walls – Three wipe samples will be collected from structural concrete/lobby wall materials on three randomly selected floors. The location of each wipe sample will be selected as follows:
 - The associated elevator shaft and location along the former joint will be randomly selected; and

**Attachment 3 – Dubois Library
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

- One wipe sample will be collected at a distance of 1.5 inches from the former caulked joint (i.e., within the return of the elevator door recess, prior to the first 90-degree angle). Two wipe samples will be collected at a distance of 10 inches from the former joint (the higher number of samples is based on the higher likelihood of direct contact with the lobby walls compared to the relatively small [1.5-inch-wide] elevator door recess).
- Ceiling – One wipe sample will be collected from ceiling materials on a randomly selected floor.
- Transom Plaster – The final construction included the installation of sheet metal cladding over the existing transom plaster. No verification wipe samples will be collected due to the lack of direct contact exposure pathway to the transom plaster.

Indoor Air Sampling: Based on the results of indoor air monitoring through October 2015, which indicated that PCB concentrations were not dependent on seasonal variations of the ventilation system and were decreasing over time, the frequency of indoor air sampling was modified in 2016 to include one round of sampling per year. The sampling was selected to be conducted in July of each year to evaluate conditions during the summer months in periods of warmer ambient temperatures when the building ventilation dampers generally in a more closed configuration to provide less make-up air.

In 2018, a site-specific exposure level for PCBs in indoor air was calculated in accordance with EPA's "Exposure Levels for Evaluating Polychlorinated Biphenyls (PCBs) in Indoor School Air". This calculation provides a target level to maintain an overall PCB exposure below the oral reference dose of 20 ng PCB/kg body weight per day. The resulting calculation provides exposure levels that may be used to guide thoughtful evaluation of indoor air quality (per EPA guidance [July 28, 2015 *PCBs in Building Materials – Q&A*], these exposure levels should not be interpreted nor applied as "not-to-exceed criteria"; Isolated or infrequent indoor air PCB measurements that exceed the exposure levels would not signal unsafe exposure to PCBs).

Within the elevator lobbies, it was assumed that students could be present for approximately 250 days per year with a frequency of 0.8 hours in the lobby (assuming 10 elevator trips per day and 5 minutes in the lobby per trip, for 50 minutes per day) Using EPA's PCB Exposure Estimation Tool (v1.2), a site-specific PCB indoor air exposure level was calculated using the above frequency and duration assumptions. For both school and non-school exposures, EPA PCB background concentrations for dust, soil, indoor air, and outdoor air were used. The calculated exposure level was 3,357 ng/m³.

Indoor air samples are to be collected over a minimum of six hours in accordance with the US EPA Compendium Method TO-10A "Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)". Samples will be submitted to a certified analytical laboratory for PCB Homolog Analysis via US EPA Method 680A with a laboratory reporting limit of < 0.10 µg/m³.

Previous Monitoring Activities

Visual Inspections and Surface Wipes

Visual inspections of the encapsulated materials conducted between 2013 and 2019 indicated that the coatings remained in good physical condition with no observed damage other than slight wearing of the outer latex paint layer. Results of verification wipe samples collected during previous events indicated that PCBs were either non-detect or present at concentrations < 1 µg/100 cm² in all samples.

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Indoor Air

Indoor air sampling was conducted at a minimum of twice per year from 2013 through 2015 (to evaluate potential seasonal fluctuations) and then on an annual basis starting in 2016. Analytical results were relatively consistent across all events with the maximum and average concentrations consistently within or slightly below the concentration range identified for continued monitoring between 2012 and 2017 (500 to 1,180 ng/m³) and below the site-specific exposure level of 3,357 ng/m³ calculated following the 2018 sampling event. However, analytical results from samples collected from the 19th and 23rd floors in July 2019 were higher than results from previous sampling events. Analytical results from a follow up sample collected in September 2019 were consistent with (although slightly lower than) previous sampling events indicating that the results from July 2019 may have represented an anomalous condition for these spaces. Analytical results for samples collected during the summer months from 2015 through 2019 are summarized on Table 3-1.

2020 Monitoring Activities

Visual Inspections

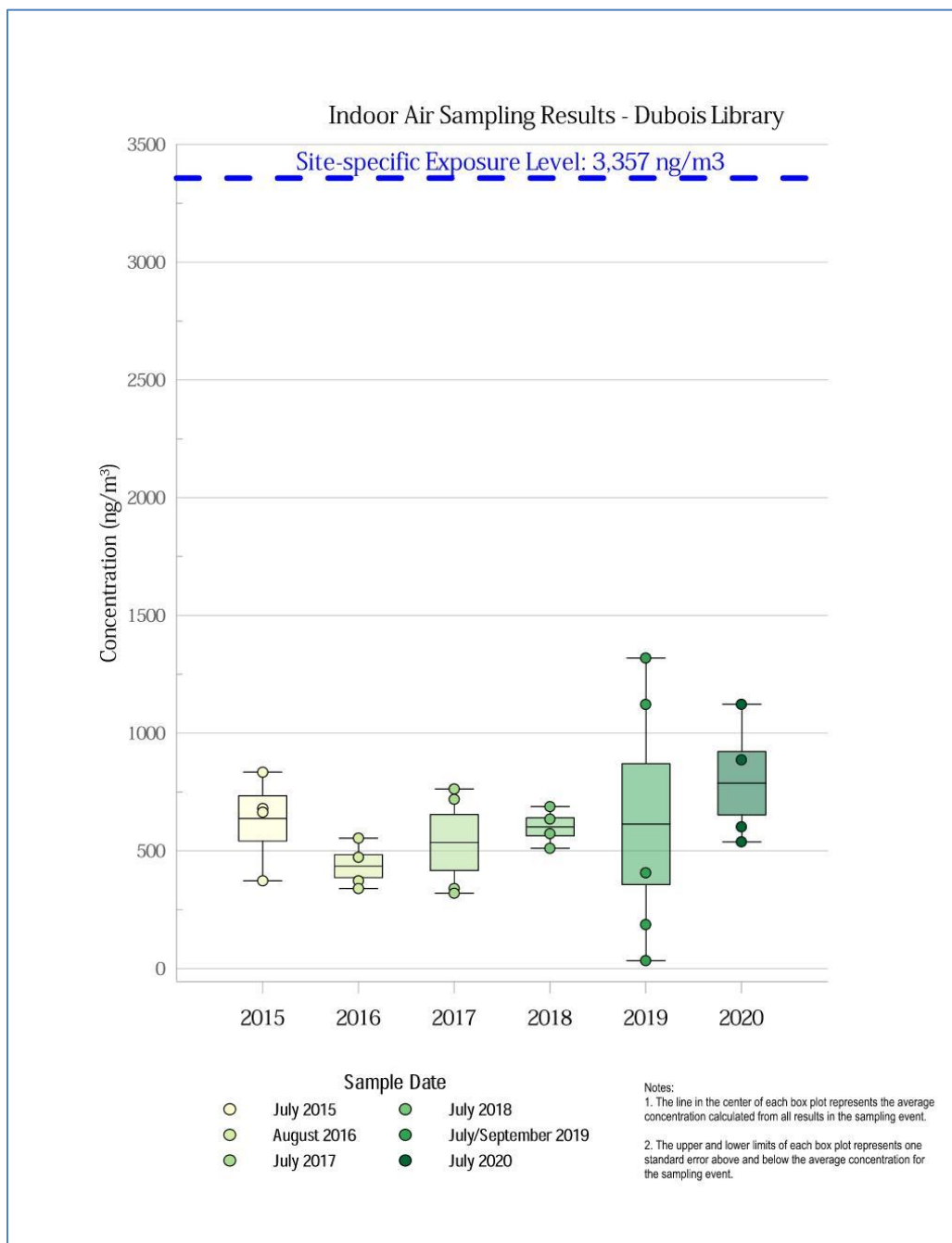
Visual inspections of encapsulated surfaces were conducted during the annual monitoring event on July 31, 2020. Coatings were observed to be in good physical condition with no signs of wear or damage.

Indoor Air Sampling

Four indoor air samples were collected on July 31, 2020 from the 4th, 13th, 19th and 23rd floors. Analytical results indicated that PCBs were reported at concentrations ranging from 538 to 1,122 ng/m³. Analytical results remain well below the site-specific exposure level of 3,357 ng/m³. However, consistent with the results from the 2019 sampling event, analytical results from samples collected on the 19th and 23rd floors were higher than the results from previous sampling events (although in both cases lower than the results from 2019). As depicted on the chart below, these higher reported concentrations resulted in a higher average concentration than in previous years; however, overall, the range of reported concentrations in the 2020 sampling event was lower than the 2019 event. During the sampling event no maintenance or other activities were observed, and the ventilation system was reported to be operating under normal conditions by UMass personnel. Also of note, due to the University's Covid-19 protocols the Dubois Library was not being utilized as in previous years with less students and workers in the building.

The complete analytical results are included in Attachment 7. A summary of the analytical results from the 2020 event and the previous five events (2015 to 2019) is presented on Table 3-1 and on the box plot chart on the following page.

**Attachment 3 – Dubois Library
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Corrective Actions

Based on the 2020 monitoring activities, no corrective actions are proposed at this time.

Next Monitoring Event

The next monitoring event is scheduled for July 2021 to include visual inspections, surface wipe sampling, and indoor air sampling.

Table 3-1
Summary of Indoor Air Sample Results - Dubois Library
UMass Amherst

Floor	Air Sample	PCB Concentration (ng/cartridge)	Flow Rate (L/Minute)	Duration (minutes)	PCB Concentration (ng/m ³)
Project Specific Exposure Level: 3,357 ng/m³					
Post PCB Remediation Indoor Air Samples					
July 21, 2015					
4	DL-4E-IAS-219	0.23	2.68	240	0.373
13	DL-13E-IAS-220	0.42	2.71	240	0.680
19	DL-19E-IAS-221	0.52	2.73	240	0.834
23	DL-23E-IAS-223	0.41	2.71	240	0.664
Post PCB Remediation Indoor Air Samples					
August 3, 2016					
4	DL-4E-IAS-231	350	2.63	360	373 J/UJ
8	DL-8E-IAS-232	320	2.65	360	340 J/UJ
19	DL-19E-IAS-234	520	2.63	360	554 J/UJ
20	DL-20E-IAS-235	440	2.62	360	473 J/UJ
Post PCB Remediation Indoor Air Samples					
July 3, 2017					
4	DL-4E-IAS-241	310	2.67	360	340 J/UJ
13	DL-13E-IAS-239	290	2.62	360	320 J/UJ
19	DL-19E-IAS-238	700	2.65	360	763 J/UJ
23	DL-23E-IAS-237	660	2.66	360	719 J/UJ
Post PCB Remediation Indoor Air Samples					
July 10, 2018					
4	DL-4E-IAS-005	475	2.65	367	511 J
13	DL-13E-IAS-004	538	2.65	371	573 J
19	DL-19E-IAS-002	637	2.64	371	688 J
23	DL-23E-IAS-001	643	2.68	400	635 J
Post PCB Remediation Indoor Air Samples					
July 29, 2019 and September 17, 2019					
4	DL-4E-IAS-245	510	3.66	360	407
13	DL-13E-IAS-244	44	3.73	362	34
19	DL-19E-IAS-243	1655	3.70	360	1319
	DL-19E-IAS-246	173.8	2.63	361	187
23	DL-23E-IAS-242	1425	3.74	362	1122
Post PCB Remediation Indoor Air Samples					
July 31, 2020					
4	DL-4E-IAS-245	546	2.62	360	602
13	DL-13E-IAS-244	476	2.56	360	538
19	DL-19E-IAS-243	980	2.54	360	1122
23	DL-23E-IAS-242	777	2.55	361	886

Notes:

Project Specific Exposure Level calculated using EPA's PCB Exposure Estimation Tool (v1.2).
Air samples collected in accordance with USEPA Compendium Method TO-10A "Determination of Pesticides and Polychlorinated Biphenyls In Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)" and submitted for laboratory analysis of PCBs homologs.
ng/m³ = nanograms per cubic meter
J/UJ = Analytical results qualified as estimated based on external data validation of individual homolog groups.



Attachment 4 – Orchard Hill Residential Complex

**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**


Location: Orchard Hill Residential Area

Building: Webster, Field, and Grayson Houses

Summary of Remedial Areas

In-Place Management: Residual PCBs > 1 ppm are being managed in place following abatement activities in the following locations:

Field and Grayson Houses

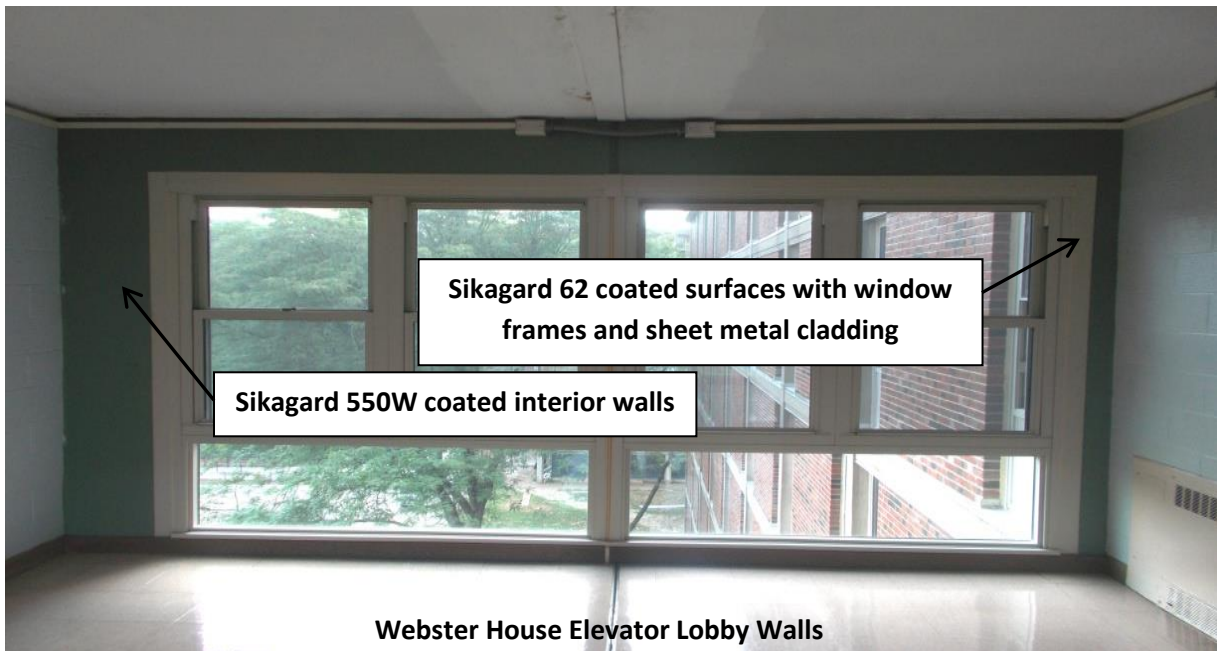
- Exterior Parapet Masonry Joints (2010): Following replacement of caulking along masonry joints at the upper parapet walls of the Field and Grayson Houses, two coats of Sikagard 62 liquid epoxy coating were applied to concrete materials formerly in direct contact with and to a distance of 6 inches from the joints in either direction (see the photograph to the right).
- 
- Elevator Hall CMU Block Walls (2012 and 2013): PCBs are being managed in place at > 1 ppm at the 6th floor elevator lobby of both Field and Grayson Houses following the removal of caulked joints around Type D windows (see Figure 4-1).
 - CMU block materials formerly in direct contact with the caulked joint (i.e., header surfaces) are encapsulated with two coats of Sikagard 62 epoxy coating and the replacement window frames/sheet metal flashing; and
 - CMU block materials above the upper horizontal joints to the first 90-degree angle (i.e., to the ceiling at a distance of approximately 15 inches) are encapsulated with two coats of Sikagard 550W elastomeric acrylic coating. (Note: Sikagard 550W was applied to the CMU block walls of all elevator lobbies as part of the renovation project).
 - Concrete Spandrel Beams (2012 and 2013): Exterior concrete spandrel beam materials on the north and south elevations (located in line with the Elevator Hall Windows) formerly in direct contact with the concrete expansion joint caulking and to a distance of three inches in either direction have been encapsulated using two coats of Sikagard 62 epoxy coating (see Figure 4-1).
 - Grayson House Exterior Narrow Stairwell Window Jambs (2012): Brick materials on the jambs of the northern stairwell west elevation narrow stairwell windows on the sixth and seventh floors formerly in direct contact with the exterior perimeter window caulking and to the end of the window recess (the first 90-degree angle) have been encapsulated using two coats of Sikagard 62 epoxy coating and the replacement window frames/sheet metal flashing (see Figure 4-1).
 - Grayson House Interior Stairwell Concrete Sills (2012): Concrete window sill and header materials at the northern stairwell landings from the second through seventh floors formerly in direct contact with the interior perimeter window caulking and to the first 90-degree angle (approximately two inches) have been encapsulated using two coats of Sikagard 62 epoxy coating and the replacement window frames (see Figure 4-1).

**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
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- Field House Interior Stairwell Brick Jambs (2012): Brick window jamb materials at the southern stairwell landings from the second floor through seventh floors formerly in direct contact with the interior perimeter window caulking and to a distance of two inches (i.e., the extent of the replacement window frames) have been encapsulated using two coats of Sikagard 62 epoxy coating and the replacement window frames (see Figure 4-1).

Webster House

- Elevator Lobby Interior Walls – Concrete materials formerly in direct contact with caulking and to a distance of four inches from the caulked joint were encapsulated with two coats of grey Sikagard 62 epoxy coating and subsequently covered by the newly installed metal window frames and sheet metal cladding. Remaining interior wall materials to the first 90-degree angle were encapsulated with two coats of green Sikagard 550W acrylic coating (see photograph below).
- Northwest Elevation Exterior Concrete Ceiling – Materials formerly in direct contact with caulking along 100 linear feet (l.f.) of ribbon type windows on the northwest building elevation were encapsulated with two coats of grey Sikagard 62 epoxy coating and subsequently covered by the newly installed metal window frames (see Figure 4-2).



**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
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Baseline Verification Data Summary: A summary of the initial wipe sampling results for the encapsulated areas is presented below.

Field and Grayson Houses

- Exterior Parapet Masonry Joints: Initial wipe samples of the exterior joints were collected in August 2010 following application of the Sikagard 62 epoxy. Analytical results from the 26 wipe samples collected indicated that PCBs were non-detect (24 samples at $< 0.20 \mu\text{g}/100\text{cm}^2$) or $< 1 \mu\text{g}/100\text{cm}^2$ (2 samples with total PCBs reported at concentrations of 0.44 and $0.90 \mu\text{g}/100\text{cm}^2$).
- Elevator Hall CMU Block Walls:
 - Sikagard 62 Epoxy Coated Materials – In July 2012, prior to installation of the window frames and sheet metal cladding, one verification wipe sample was collected from the encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).
 - Sikagard 550W Elastomeric Coated Materials – In August 2012, one verification wipe sample was collected from encapsulated materials above the 6th floor elevator hall windows. Analytical results indicated that PCBs were non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).
- Concrete Spandrel Beams – Following application of the liquid coatings in August 2012 and July 2013, four verification wipe samples were collected from encapsulated surfaces of the concrete spandrel beams. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in the four samples.
- Grayson House Exterior Narrow Stairwell Window Jambs – In July 2013, prior to installation of the window frames, one verification wipe sample was collected from the encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).
- Grayson House Interior Stairwell Concrete Sills - In July 2012, prior to installation of the window frames, one verification wipe sample was collected from the encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).
- Field House Interior Stairwell Brick Jambs - In July 2012, prior to installation of the window frames, one verification wipe sample was collected from the encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100\text{cm}^2$).

Webster House

- Elevator Hall Interior Walls:
 - Sikagard 62 Epoxy Coated Materials – In July 2011, prior to installation of the window frames and sheet metal cladding, six verification wipe samples were collected from encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in the six samples collected.
 - Sikagard 550W Elastomeric Coated Materials – Six initial baseline wipe samples were collected in November 2011. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in all six samples.
- Northwest Elevation Exterior Concrete Ceiling Direct Contact Materials: Prior to installation of the sheet metal cladding, three verification wipe samples were collected from encapsulated surfaces. Analytical results reported PCBs as non-detect ($< 0.20 \mu\text{g}/100 \text{ cm}^2$) in the three samples collected.

**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Monitoring and Maintenance Implementation Plan

The Monitoring and Maintenance Implementation Plans (MMIP) for the three buildings were submitted to EPA in January 2012 (Webster House) and January 2014 (Field and Grayson Houses) and included visual inspections and verification wipe sampling of encapsulated surfaces.

Based on the baseline sample results (majority were non-detect for PCBs) and some encapsulated areas subsequently covered by window frames and sheet metal cladding, wipe sampling was limited to accessible surfaces. Following the 2015 monitoring event and subsequent communications with EPA, the monitoring plan was modified to include annual visual inspections and biennial wipe sampling of accessible encapsulated surfaces. A summary of the monitoring plans is provided below:

Field and Grayson Houses

- Visual inspection of masonry joints along the roof lines from the ground. Due to the limited accessibility to these areas, wipe samples are not included in the long-term monitoring. In areas where damage or deterioration of the encapsulant or caulking is observed, recommendations for corrective actions will be proposed.
- Visual inspections of the other encapsulated surfaces will be conducted to look for signs of encapsulant deterioration and/or signs of weathering or disturbance of metal window frames and sheet metal barriers.
- Two surface wipe samples of the encapsulated concrete spandrel materials on the exterior side of the Elevator Hall Windows (Type D) will be collected on a biennial basis to evaluate the concentration of PCBs present at the surface. The wipe samples will be collected from a randomly selected portion of the joints between the first and second floors due to access limitations (a lift would be required and limited area of accessibility by building users) to higher locations.
- One surface wipe sample of the encapsulated interior CMU block walls on the sixth floor of the Grayson and Field Houses elevator hall areas not located beneath the Type D window frames will be collected on a biennial basis from a randomly selected location to evaluate the concentration of PCBs present at the surface.
- No surface wipe samples will be collected from encapsulated surfaces formerly in direct contact with caulking at the Type G, H, and I Narrow Stairwell Windows or the Type J Stairwell Windows, as all encapsulated surfaces at these window types are located under the replacement window frames or sheet metal cladding. Direct contact access to these surfaces is prohibited by a secondary barrier (i.e., new windows and/or metal cladding installed over the encapsulant).

Webster House

Based on the baseline sample results (all non-detect for PCBs) and encapsulated areas subsequently covered by window frames and sheet metal cladding associated with the new window installation, the only accessible coating is in areas at the interior CMU block walls in the elevator lobbies. A total of three surface wipe samples of these encapsulated (Sikagard 550W) interior CMU block walls will be collected from randomly selected locations on a biennial basis.

**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
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Previous Monitoring Activities – 2012 through 2019

Long term monitoring activities conducted between 2012 and 2019 were reported in the annual long-term monitoring reports and are summarized below:

Visual Inspections – results of visual inspections conducted as part of the annual monitoring activities reported the coatings and physical barriers (window frames, sheet metal cladding, caulking) to be in good physical condition with no evidence of deterioration or damage. The exceptions to this were coated concrete surfaces around a single roofline joint on field house (additional coating applied in 2018) and limited amount of damaged paint on the 6th floor elevator lobby wall at Grayson House (repainted in 2017).

Surface Wipe Sampling – analytical results from surface wipe samples collected from encapsulated surfaces reported PCBs as either non-detect or at concentrations < 1 ug/100cm².

Indoor Air Sampling – at the request of EPA, two indoor air samples were collected from the elevator lobby areas at Webster and Grayson Houses in 2016. Samples were collected over a minimum of six hours in accordance with EPA Compendium Method TO-10A Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling. Analytical results indicated that PCBs were present at concentrations of 36 and 38 ng/m³. Given the transitory nature of the elevator lobbies and the anticipated limited duration a typical occupant would be present in these buildings (no more than four years to coincide with a typical undergraduate degree program), these concentrations are well below any projected exposure levels. As such, no additional indoor air sampling was proposed to be conducted within these spaces.

2020 Monitoring Activities

The 2020 monitoring event was conducted on August 20, 2020 and included visual inspections of encapsulated surfaces and secondary physical barriers.

- Field and Grayson Houses:
 - Exterior Parapet Masonry Joints – Coated concrete surfaces surrounding the exterior parapet masonry joints were inspected and found no evidence of deterioration of the coating.
 - Concrete Spandrel Beams – Coated concrete surfaces surrounding exterior spandrel beams were inspected and found no evidence of deterioration of the coating.
 - Elevator Hall CMU Block Walls – Coated CMU block materials within the elevator lobby areas were inspected and found no evidence of deterioration of the coatings.
 - Stairwell Materials – Visual inspection of the windows and sheet metal cladding was conducted at the exterior narrow stairwell window jambs of the Grayson House and on the interior stairwell window concrete sills and brick jambs of both buildings. No evidence of damage to the materials was observed.
- Webster House - No signs of damage were observed to the sheet metal cladding and window frames on the northwest building elevation. Sheet metal cladding and liquid coatings in the elevator lobby areas were observed to be in good condition with no signs of wear or damage.

**Attachment 4 – Orchard Hill Area
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Corrective Actions

Based on the results of the 2020 monitoring event, no corrective actions are required at this time.

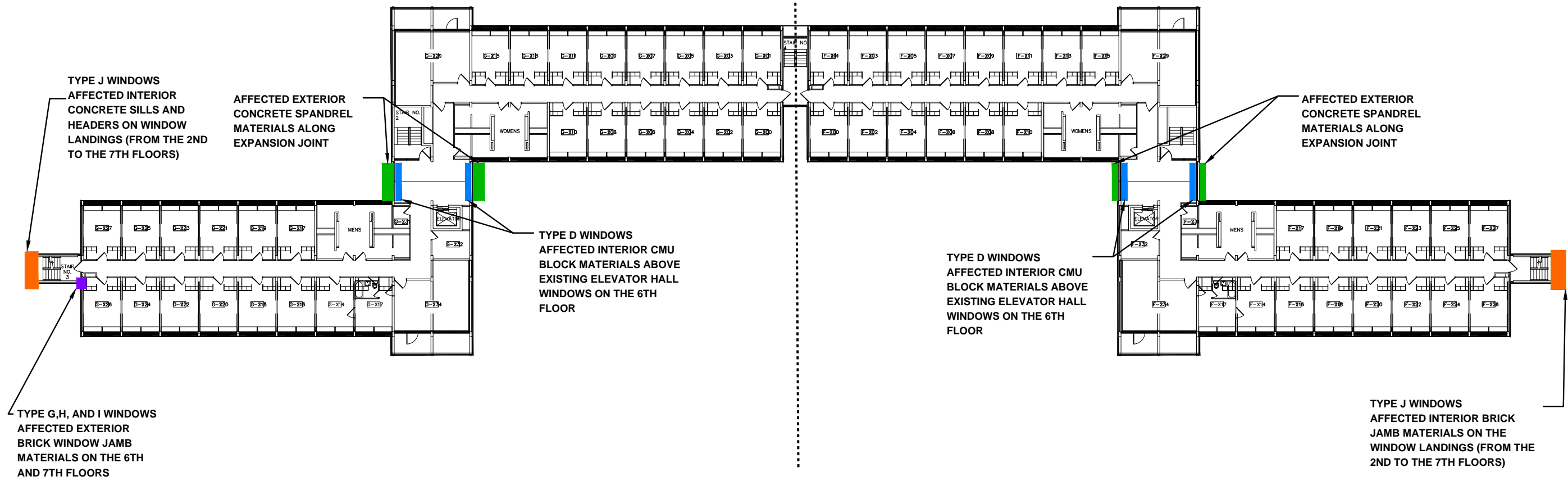
Next Monitoring Event

The next monitoring event will be conducted in 2021 and will include visual inspections of encapsulated surfaces and secondary physical barriers along with surface wipe sampling of encapsulated surfaces in accordance with the long-term monitoring plans.

ENCAPSULATED BUILDING SURFACES


Grayson House

Field House



- Notes:
- 1. Original design drawings by CBI Consulting, Inc. modified to show encapsulated building surfaces.
 - 2. This drawing depicts the typical building layout for the second through seventh floors of the Grayson and Field Houses.

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UMASS GRAYSON & FIELD HOUSE
AMHERST, MASSACHUSETTS

Long Term Monitoring and Maintenance
Report

JOB NO: 224824.00
DATE: NOVEMBER 2013
SCALE: NONE

Figure 4-1

Drawing details taken from Webster House Window Replacement drawing D-A-333-10-001711-01-T2 dated February 3, 2011 by Gale Associates, Inc. of Weymouth, Massachusetts.





Attachment 5 – Sylvan Residential Complex

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Location: Sylvan Complex

Building: Brown, Cashin, McNamara

Summary of Remedial Areas

In-Place Management: Residual PCBs at concentrations > 1 part per million (ppm) are being managed in place at interior and exterior locations on the three buildings within the Sylvan Complex. A summary of the locations is as follows:

- Exterior Locations – along horizontal and vertical expansion joints in both high occupancy areas (i.e., within 8'8" of the ground surface) and low occupancy areas (i.e., > 8' 8" from the ground surface):
 - Exterior Brick Within the Return of Horizontal and Vertical Control Joints (20,690 linear feet [l.f.]) – Brick materials located within the return of the horizontal and vertical control joints were encapsulated with up to three coats of Sikagard 62 liquid epoxy coating and subsequently covered with replacement caulking.
 - Exterior Brick Adjacent to Horizontal Control Joints in High Occupancy Areas (860 l.f.) – One full row of brick above and three full rows of brick below horizontal control joints within 8' 8" of the ground surface were encapsulated with up to three coats of Sikagard 670W clear acrylic coating.
 - Exterior Brick Adjacent to Vertical Control Joints in High and Low Occupancy Areas (5,690 l.f.) – One full row of brick on either side of the vertical control joints were coated with up to three coats of Sikagard 670W clear acrylic coating.
- Interior Locations – along former caulked joints and adjacent building materials as follows:
 - Interior Concrete Columns/Walls (352 square feet [s.f.]) – Select interior concrete columns and walls at the Brown and McNamara buildings were coated with liquid coatings as part of the ADA restroom upgrades in these buildings and interior renovations to the lower level common areas at McNamara. Materials formerly in direct contact with the removed source materials were coated with two coats of Sikagard 62 liquid epoxy coating. Materials containing PCBs > 1 ppm away from the former source materials were coated with a minimum of two coats of Sikagard 670W acrylic, and/or Sikagard 550W elastomeric paint.
 - Interior Concrete Ceilings (835 s.f.) – Concrete ceilings outside the ADA Restroom upgrades at Brown and McNamara and the ceiling within the first-floor common area (now the first floor office space) at Cashin were coated with liquid coatings. Materials formerly in direct contact with the source materials were coated with two coats of Sikagard 62 liquid epoxy coatings. Materials containing PCBs > 1 ppm away from the former source materials were coated with a minimum of two coats of Sikagard 670W acrylic and/or Sikagard 550W elastomeric paint.

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Photographs of typical coating application areas are provided below.



Typical Interior Encapsulated Surfaces
(Concrete Walls and Ceiling)



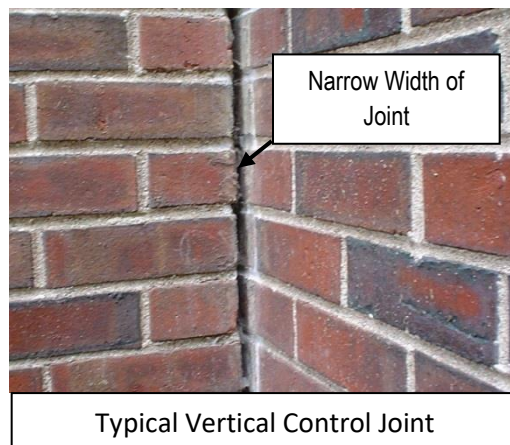
Typical Vertical and Horizontal Control Joints
(New Caulking and Clear Coating Visible)

Baseline Verification Data Summary: Following remediation activities, baseline verification wipe samples were collected from encapsulated surfaces as follows:

- Exterior - former direct contact areas:
 - Horizontal control joints on the building's façade:
 - 83 wipe samples collected;
 - Of which 79 samples were reported as $< 1 \mu\text{g}/100\text{cm}^2$ total PCBs (95% of the samples); and
 - 4 samples $> 1 \mu\text{g}/100\text{cm}^2$ at 1.2, 1.3, 2.4, and $4.8 \mu\text{g}/100\text{cm}^2$ (3 at McNamara and 1 at Cashin; none at Brown).
 - Vertical control joints on the building's façade:
 - 38 wipe samples collected;
 - Of which 23 samples were reported as $< 1 \mu\text{g}/100\text{cm}^2$ total PCBs (60% of the samples); and
 - 15 samples $> 1 \mu\text{g}/100\text{cm}^2$; 12 of the 15 samples were collected from McNamara (up to $250 \mu\text{g}/100\text{cm}^2$), 1 at Brown ($1.2 \mu\text{g}/100\text{cm}^2$); and 2 at Cashin (1.15 and $3.5 \mu\text{g}/100\text{cm}^2$).
- Exterior - areas away from the former caulked joints:
 - Horizontal control joints on the building's façade in high occupancy areas:
 - 19 wipe samples collected; and
 - All 19 samples were reported as $< 1 \mu\text{g}/100\text{cm}^2$ total PCBs (100% of the samples).
 - Vertical control joints on the building's façade:
 - 44 wipe samples collected;
 - Of which 35 samples were reported as $< 1 \mu\text{g}/100\text{cm}^2$ total PCBs (80% of the samples);
 - 9 samples $> 1 \mu\text{g}/100\text{cm}^2$; 8 of the 9 samples were collected from McNamara (up to $2.3 \mu\text{g}/100\text{cm}^2$) and 1 at Brown ($1.8 \mu\text{g}/100\text{cm}^2$); and
- All baseline verification wipe samples from the interior encapsulated areas were below the target level of $1 \mu\text{g}/100\text{cm}^2$ with the exception of three samples from McNamara (1.3 , 1.5 , and $1.6 \mu\text{g}/100\text{cm}^2$).

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

As indicated above, most locations met the target levels (with some minor areas slightly above the target level) with the exception of the vertical control joints at McNamara. As data was reviewed during the McNamara exterior renovation project, additional measures were conducted including additional coats of epoxy and more frequent inspections. Given the limited size of the joints, observations indicated some of the backing material deep within the return of the narrow joint could not be removed without substantial damage to the brick façade; residual PCBs in this material may be affecting the epoxy wipe results; however, this material was subsequently covered by the epoxy, new backing material, and new caulking.



Monitoring and Maintenance Implementation Plan

Following completion of the remediation activities at the three buildings, a Long Term Monitoring and Maintenance Implementation Plan (MMIP) was submitted to the United States Environmental Protection Agency (EPA) in February 2014. The MMIP included visual inspections and surface wipe sampling of the encapsulated surfaces as follows:

Visual Inspections: Visual inspections will be conducted at representative areas of each of the types of encapsulated surfaces to confirm the presence of the encapsulating coatings/barriers.

Surface Wipe Sampling: Surface wipe samples will be collected from representative locations of the following encapsulated surfaces to aid in determining the effectiveness of the encapsulants over time.

- Areas Adjacent to Exterior Façade Horizontal Control Joints in High Occupancy Areas (< 8'-8" above ground surfaces [ags]) (860 l.f.) – 1 sample per building façade (total of 12 samples proposed; 4 per building);
- Areas Adjacent to Exterior Façade Vertical Control Joints in High Occupancy Areas (< 8' -8" ags) (878 l.f.) – 1 sample per building façade (total of 12 samples proposed; 4 per building);
- Interior Concrete Columns/Walls (Brown and McNamara) (352 s.f.) – 1 sample per work area (total of 3 samples proposed; 1 at Brown and 2 at McNamara); and
- Interior Concrete Ceilings (Brown, McNamara, and Cashin) (835 s.f.) – a total of five samples to be collected with a minimum of 1 sample per work area (1 at Brown; 2 at McNamara; and 2 at Cashin).
- Collection of surface wipe samples from exterior encapsulated surfaces in low-occupancy areas (i.e., surfaces at heights greater than 8'-8" ags) is not conducted given their inaccessibility and the low likelihood that these surfaces will be contacted by occupants or building users.

Following the completion of the 2017 monitoring event, modifications to the long-term monitoring program were proposed to include annual visual inspections and biennial wipe sampling of the accessible encapsulated surfaces. On June 4, 2019, EPA issued the PCB Decontamination and Disposal Approval for the Sylvan Complex which included confirmation that long-term monitoring was to continue in accordance with the MMIP.

Previous Monitoring Events

Visual inspection and wipe sampling of encapsulated surfaces was conducted in accordance with the MMIP as described above from 2014 to 2019. In addition, indoor air samples were collected during multiple events in 2016, 2017, and 2018 to evaluate indoor air conditions during periods of varying ambient conditions. Results of the monitoring activities are summarized below:

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Visual Inspection: Results of the visual inspections indicated that the encapsulating barriers (caulking within exterior control joints and liquid coatings applied over interior and exterior areas with residual PCBs) were in good physical condition. Isolated areas of flaking and peeling were observed on the clear coating over the brick surfaces adjacent to the joints. The flaking and peeling were consistent with observations of similar coating applications at other areas on the campus.

Wipe Samples: Wipe samples were collected from interior and exterior coated masonry surfaces as described above. A summary of the results is as follows:

- Sikagard 670W Clear Acrylic Coating: Wipe samples were collected from exterior brick along horizontal and vertical control joints within high occupancy areas at the three buildings. Analytical results were as follows:
 - Horizontal Control Joints – From 2014 to 2018, PCBs were reported as either non-detect or present at concentrations $< 1 \mu\text{g}/100\text{cm}^2$ (6 samples with PCB reported at concentrations up to $0.58 \mu\text{g}/100\text{cm}^2$). These results were consistent with the baseline data.
 - Vertical Control Joints – From 2014 to 2018, analytical results reported PCBs as either non-detect or present at concentrations ranging from 0.23 to $3.4 \mu\text{g}/100\text{cm}^2$ (13 samples). These results were consistent with the baseline data.
- Interior Concrete Columns/Walls: Three wipe samples were collected during each event from interior concrete columns/walls encapsulated with Sikagard 550W elastomeric coating (the final coating applied to interior concrete columns and walls). Analytical results were consistent with the baseline data with PCBs reported as either non-detect (9 samples at $< 0.20 \mu\text{g}/100\text{cm}^2$) or present at concentrations of 0.21 , 0.75 , and $1.27 \mu\text{g}/100\text{cm}^2$.
- Interior Concrete Ceiling: Five wipe samples were collected during each event from interior concrete ceiling surfaces encapsulated with interior acrylic paint (the final coating applied over Sikagard 62 liquid epoxy and/or Sikagard 670w clear acrylic). Analytical results indicated that PCBs were either non-detect (16 samples at $< 0.20 \mu\text{g}/100\text{cm}^2$) or present at concentrations ranging from 0.38 to $0.81 \mu\text{g}/100\text{cm}^2$ (5 samples – all collected from McNamara). These results are consistent with the baseline data.
- McNamara Vertical Control Joints: Four wipe samples (1 per elevation) were collected from the surface of the replacement caulking on the McNamara vertical control joints in 2014 and 2015. Analytical results indicated that PCBs were present in the wipe samples at concentrations ranging from 13 to $77 \mu\text{g}/100 \text{ cm}^2$. These results were consistent with the verification/baseline monitoring wipes collected at the completion of the project where analytical results had indicated that PCBs were present at a maximum concentration of $250 \mu\text{g}/100\text{cm}^2$ on the liquid epoxy coating. In addition to the hexane wipes, four saline wipes were collected during both events from the locations co-located with the hexane wipe samples to evaluate alternative wipe sampling procedures to assess “surface” concentrations of PCBs to determine if the hexane was “extracting” or “pulling” the PCBs from within the porous caulking. Analytical results from the saline wipes indicated that PCBs were present at concentrations ranging from 0.28 to $7.6 \mu\text{g}/100\text{cm}^2$. Based on these results, the hexane wipes may not be truly representative of surficial PCBs that could be available for direct contact and/or leaching through normal anticipated pathways (e.g., incidental contact, rainwater, etc.).

Based on the results of samples from the surface of the replacement caulking, UMass evaluated products to apply as secondary physical barriers over the lower portions of the vertical joints at McNamara; although no decision as to a final product has been made.

Indoor Air Sampling

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Between 2016 and 2019, multiple rounds of indoor air sampling were conducted to evaluate indoor air conditions in the renovation areas of the three buildings. The initial sampling events were conducted to evaluate indoor air conditions during periods of normal occupancy and periods when the building was not occupied as well as periods of varying ambient outdoor conditions (e.g., warmer summer months, cooler fall/spring months, and colder winter months).

On average, the higher PCB concentrations were detected in the Summer months during the period of warmer ambient temperatures and when the building is unoccupied and typically closed-up with minimum usage (e.g., building doors and windows typically closed and students and staff either not present or in the buildings at a reduced frequency).

As presented in the 2017 monitoring report, site-specific exposure levels for each of the three types of spaces where residual PCBs were encapsulated were calculated in accordance with EPA's "Exposure Levels for Evaluating Polychlorinated Biphenyls (PCBs) in Indoor School Air" using occupancy durations provided by UMass for the various types of spaces and building users.

Overall, analytical results from the indoor air sampling demonstrate that the concentration of PCBs in indoor air remained below the calculated site-specific exposure levels during periods of normal occupancy (with the exception of the Cashin Service Desk area in 2017; only one time exceedance, later rounds were below) and that the ventilation of the three buildings prior to the start of the fall semester is effective in reducing the PCB concentrations in indoor air (based on a comparison between the results from the fall sampling events and the summer sampling events as described in previous submittals).

Because the intent of the monitoring is to evaluate potential exposures to building occupants under normal operating and use conditions, indoor air sampling will be conducted during the early parts of the fall semester. This timeframe was selected to evaluate conditions during periods of normal building use and occupancy that would typically coincide with periods of warmer ambient temperatures. Based on the 2019 indoor air results, another round of sampling was proposed to be conducted in 2020.

2020 Monitoring Activities

The 2020 monitoring event was conducted on August 20, 2020 and included visual inspections and surface wipe sampling. The monitoring event was conducted in August instead of September as originally planned due to the University's decision to keep the Sylvan buildings unoccupied for the 2020 fall semester. The buildings were to remain unoccupied due to the reduced number of students returning to campus and the University's re-entry plans, building use, and campus protocols associated with Covid-19.

A summary of the results is presented below.

Visual Inspection

Results of the visual inspections are as follows:

- Exterior Expansion Joint Caulking: Visual inspection of the caulking within the horizontal and vertical controls joints indicated that the caulking was in good physical condition with no damaged or missing sections observed.
- Exterior Brick Surfaces: Visual inspection of the Sikagard 670W clear acrylic coating applied along the exterior horizontal and vertical controls joints indicated that the coating remains in good condition over the majority of encapsulated surfaces with isolated areas of flaking and peeling consistent with previous monitoring events.
- Interior Concrete Columns/Walls/Ceilings: Visual inspection indicated that coatings installed to masonry materials were in good condition. No deterioration was observed.

Wipe Samples – Exterior Masonry Joints

**Attachment 5 – Sylvan Residential Complex
Long-Term Maintenance and Monitoring Program
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Wipe samples were collected from exterior brick surfaces coated with Sikagard 670W clear acrylic coating as described above on August 20th. A summary of the analytical results is presented in Table 5-1 and is as follows:

- 24 wipe samples (12 along vertical joints and 12 along horizontal joints) were collected from brick along horizontal and vertical control joints within high occupancy areas at the three buildings and submitted for PCB analysis. Analytical results indicated that PCBs were non-detect ($< 0.20 \text{ ug}/100\text{cm}^2$) in 23 of the samples and present at a concentration of $0.79 \text{ ug}/100\text{cm}^2$ in the 24th sample (collected along a vertical joint at Brown).
- These results are consistent with the baseline monitoring event and the results of previous long-term monitoring events.

Wipe Samples – Interior Concrete Surfaces

Wipe samples were collected from interior concrete columns/walls and ceilings at the three buildings. A summary of the analytical results for each is presented below:

- Interior Concrete Columns/Walls: Three wipe samples were collected from interior concrete columns/walls encapsulated with Sikagard 550W elastomeric coating (the final coating applied to interior concrete columns and walls). Analytical results from the three samples indicated that PCBs were non-detect ($< 0.20 \text{ ug}/100\text{cm}^2$).
- Interior Concrete Ceiling: Five wipe samples were collected from interior concrete ceiling surfaces encapsulated with interior acrylic paint (the final coating applied over Sikagard 62 liquid epoxy and/or Sikagard 670w clear acrylic). Analytical results indicated that PCBs were non-detect (2 samples at $< 0.20 \text{ ug}/100\text{cm}^2$) or present at concentrations $< 1 \text{ ug}/100\text{cm}^2$ (0.37, 0.80, and $0.82 \text{ ug}/100\text{cm}^2$).
- These results are consistent with the baseline monitoring event and the results of previous long-term monitoring events.

Indoor Air Sample Collection

As indicated above, UMass designated the Sylvan buildings to remain vacant for the fall semester due to the University's Covid-19 protocols and campus plans. Because the intent of the air sampling program is to evaluate indoor air conditions as they relate to potential occupant exposures (and there are no occupants in the building), indoor air sampling was not conducted in 2020.

Conclusions/Next Steps

The results of the 2020 monitoring event were consistent with the baseline and previous monitoring events and no corrective actions or modifications to the MMIP are proposed at this time. As reported in previous annual reports, UMass continues to evaluate the application of secondary barrier systems over those vertical control joints considered to be in the high occupancy area as defined specific to this project ($< 8' 8''$ above ground surface) at the McNamara building. At this time, the final product has not been determined however, it is anticipated that it will a pre-formed silicone barrier material or similar barrier material designed to span the control joint.

Assuming the return to a standard school calendar in 2021, the next monitoring event will be conducted during the September 2021 timeframe after students return for the fall semester. Consistent with the MMIP, activities will include visual inspections and indoor air sampling (surface wipe samples are conducted biennially). UMass EHS will continue to coordinate with Residential Life to ventilate the three buildings upon preparation for students returning for the fall semester.

A summary of the planned air sampling program is as follows:

- ADA Restrooms – 1 sample will be collected from the McNamara ADA restroom area.
- First Floor and Lower Level Common Areas – 1 sample will be collected from the 1st Floor Study/Lounge area at Brown and 1 sample will be collected from the lower level study area at McNamara (total of 2 samples).
- Cashin Service Desk – 1 sample will be collected.

**Attachment 5 – Sylvan Residential Complex
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Of note, if students are designated to return to the Sylvan complex for the Spring 2021 semester, UMass will evaluate whether or not an additional/interim indoor air sampling event is to be conducted at that time.

Table 5-1
Summary of Long Term Monitoring Wipe Sampling Results - Sylvan Complex

UMass Amherst

Surface		Sample Date	Sample ID	Total PCBs (ug/wipe)
Exterior Control Joints - Adjacent Brick Materials				
Vertical Control Joints	McNamara	8/10/2017	LT-MR-VWB-500	0.68
			LT-MR-VWB-502	< 0.20
			LT-MR-VWB-503	< 0.20
		9/13/2018	LT-MR-VWV-601	< 0.20
			LT-MR-VWV-603	< 0.20
			LT-MR-VWV-605	< 0.20
		8/20/2020	LT-MR-VWV-607	< 0.20
			LTM-MR-VWBV-701	< 0.20
			LTM-MR-VWBV-702	< 0.20
			LTM-MR-VWBV-703	< 0.20
			LTM-MR-VWBV-704	< 0.20
	Brown	8/10/2017	LT-BR-VWB-506	< 0.20
			LT-BR-VWB-508	< 0.20
			LT-BR-VWB-509	< 0.20
		9/13/2018	LT-BR-VWV-609	< 0.20
			LT-BR-VWV-611	< 0.20
			LT-BR-VWV-613	< 0.20
		8/20/2020	LT-BR-VWV-615	< 0.20
			LT-BR-VWVB-709	0.79
			LT-BR-VWVB-710	< 0.20
			LT-BR-VWVB-711	< 0.20
			LT-BR-VWVB-712	< 0.20
	Cashin	8/10/2017	LT-CR-VWB-504	< 0.20
			LT-CR-VWV-617	< 0.20
		9/13/2018	LT-CR-VWV-619	< 0.20
			LT-CR-VWV-621	< 0.20
			LT-CR-VWV-623	< 0.20
		8/20/2020	LT-CR-VWBV-717	< 0.20
			LT-CR-VWBV-718	< 0.20
			LT-CR-VWBV-719	< 0.20
			LT-CR-VWBV-720	< 0.20
Horizontal Control Joints	McNamara	8/10/2017	LT-MR-VWB-501	< 0.20
		9/13/2018	LT-MR-VWH-602	< 0.20
			LT-MR-VWH-604	< 0.20
			LT-MR-VWH-606	< 0.20
			LT-MR-VWH-608	< 0.20
		8/20/2020	LT-MR-VWBH-705	< 0.20
			LT-MR-VWBH-706	< 0.20
			LT-MR-VWBH-707	< 0.20
			LT-MR-VWBH-708	< 0.20
	Brown	8/10/2017	LT-BR-VWB-507	< 0.20
		9/13/2018	LT-BR-VWH-610	< 0.20
			LT-BR-VWH-612	< 0.20
			LT-BR-VWH-614	< 0.20
			LT-BR-VWH-616	< 0.20
		8/20/2020	LT-BR-VWBH-713	< 0.20
			LT-BR-VWBH-714	< 0.20
			LT-BR-VWBH-715	< 0.20
			LT-BR-VWBH-716	< 0.20

Table 5-1
Summary of Long Term Monitoring Wipe Sampling Results - Sylvan Complex

UMass Amherst

Surface		Sample Date	Sample ID	Total PCBs (ug/wipe)
Horizontal Control Joints	Cashin	8/10/2017	LT-CR-VWB-505	< 0.20
		9/13/2018	LT-CR-VWH-618	< 0.20
			LT-CR-VWH-620	< 0.20
			LT-CR-VWH-622	< 0.20
			LT-CR-VWH-624	< 0.20
		8/20/2020	LT-CR-VWBH-721	<0.20
			LT-CR-VWBH-722	<0.20
			LT-CR-VWBH-723	<0.20
LT-CR-VWBH-724	<0.20			
Interior Renovation Areas				
Concrete Ceilings	Cashin	6/20/2017	LTM-CRI-VWC-531	<0.20
		6/20/2017	LTM-CRI-VWC-532	<0.20
		9/13/2018	LTM-CR-VWC-625	< 0.20
		9/13/2018	LTM-CR-VWC-626	< 0.20
		8/20/2020	LTM-CR-VWC-725	0.37
		8/20/2020	LTM-CR-VWC-726	< 0.20
	McNamara	6/20/2017	LTM-MRI-VWC-525	<0.20
		6/20/2017	LTM-MRI-VWC-526	<0.20
		9/13/2018	LTM-MR-VWC-627	< 0.20
		9/13/2018	LTM-MR-VWC-628	< 0.20
		8/20/2020	LTM-MR-VWC-727	0.82
		8/20/2020	LTM-MR-VWC-728	< 0.20
	Brown	6/20/2017	LTM-BRI-VWC-529	<0.20
		9/13/2018	LTM-BR-VWC-631	< 0.20
		8/20/2020	LTM-BR-VWC-729	0.80
Concrete Walls	McNamara	6/20/2017	LTM-MRI-VWW-527	<0.20
		6/20/2017	LTM-MRI-VWW-528	<0.20
		9/13/2018	LTM-MR-VWW-629	< 0.20
		9/13/2018	LTM-MR-VWW-630	< 0.20
		8/20/2020	LTM-MR-VWW-730	< 0.20
		8/20/2020	LTM-MR-VWW-731	< 0.20
	Brown	6/20/2017	LTM-BRI-VWW-530	<0.20
		9/13/2018	LTM-BR-VWW-632	< 0.20
		8/20/2020	LTM-BR-VWW-732	< 0.20

Notes:

Samples submitted for PCB analysis via USEPA method 8082 with Soxhlet Extraction (3540C).

Wipe samples collected in accordance with the standard wipe test method of 40 CFR 761.123.



Attachment 6 – Physical Plant

**Attachment 6 – Physical Plant
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

Location: Physical Plant Room 230A

Summary of Remedial Areas

In-Place Management: Residual PCBs on interior CMU block walls are being managed in place following a window replacement project conducted on the second floor of the Physical Plant in 2012 and 2013. The replacement project was conducted in the area formerly designated as Room 230A and currently identified as Rooms 204, 209, 210, 208, 212, and 214. The locations of the remediation and in-place management are depicted on Attachment A. Two coats of Sikagard 62 liquid epoxy coating were applied to CMU block materials to a distance of six inches from the former joints. The materials were then covered by the gypsum wall board finish materials and replacement frames.



Typical Area of In-Place Management

Post Abatement Wipe Sampling Data Summary: Five wipe samples were collected from the encapsulated masonry block surrounds following completion of the remediation activities. Analytical results from the five samples indicated that PCBs were non-detect ($< 2 \mu\text{g}/100 \text{ cm}^2$).

Monitoring and Maintenance Implementation Plan

The Monitoring and Maintenance Implementation Plan (MMIP) was submitted to the United States Environmental Protection Agency (EPA) on December 16, 2013 as part of the Final Completion Report. Due to the inaccessibility of the encapsulated CMU block, long term monitoring activities include visual inspections of the replacement window frames and gypsum wall board materials installed over the underlying CMU block. Visual inspections are conducted on an annual basis.

Previous Monitoring Activities

Results of visual inspections conducted on an annual basis through 2019 reported no damage, deterioration, or disturbance of the replacement window frames and gypsum wall board materials.

Monitoring Activities – July 2020

Woodard & Curran personnel performed the visual inspections of the interior finish materials for signs of damage or deterioration. The replacement window frames and gypsum wall board materials were observed to be in good condition with no signs of damage or wear.

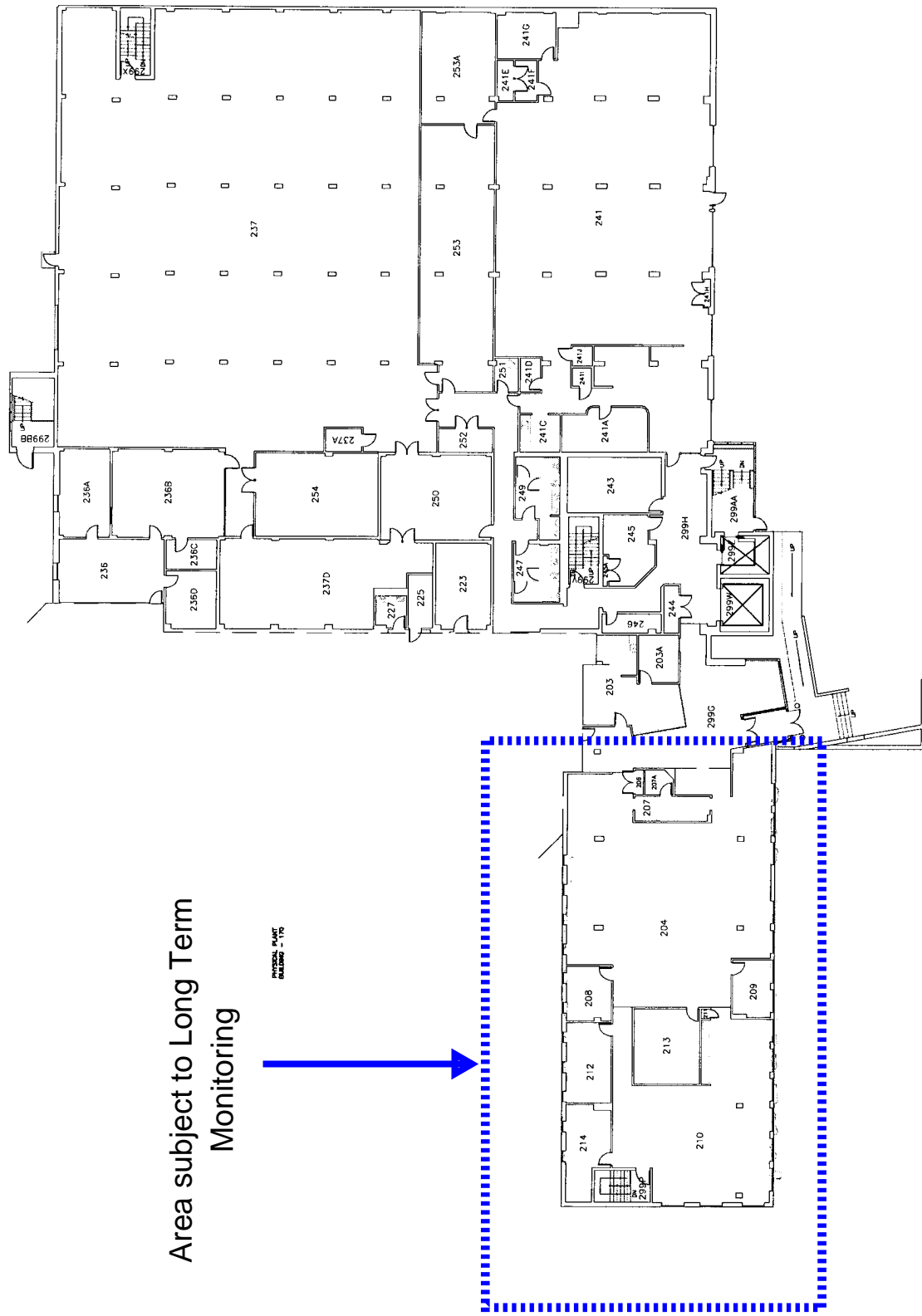
Next Monitoring Event

The next monitoring event will be conducted in July 2021 as part of the campus-wide long-term monitoring program.

**Attachment 6 – Physical Plant
Long-Term Maintenance and Monitoring Program
In-Place Management of PCB Impacted Materials
UMass Amherst**

ATTACHMENT A

Attachment A Second Floor Physical Plant



Area subject to Long Term Monitoring

PHYSICAL PLANT BUILDING - 115



Attachment 7 – Data Validation Summary and Analytical Laboratory Reports

August 11, 2020

George Franklin
Woodard & Curran - CT
213 Court Street., 4th Floor
Middletown, CT 06457

Project Location: Amherst, MA
Client Job Number:
Project Number: 225695
Laboratory Work Order Number: 20G1672

Enclosed are results of analyses for samples received by the laboratory on July 31, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Meghan E. Kelley". The signature is written in a cursive, flowing style.

Meghan E. Kelley
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332Woodard & Curran - CT
213 Court Street., 4th Floor
Middletown, CT 06457
ATTN: George Franklin

REPORT DATE: 8/11/2020

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 225695

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 20G1672

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Amherst, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
DL-Ambient-001	20G1672-01	Indoor air		TO-10A/EPA 680 Modified	
DL-23E-IAS-002	20G1672-02	Indoor air		TO-10A/EPA 680 Modified	
DL-19E-IAS-003	20G1672-03	Indoor air		TO-10A/EPA 680 Modified	
DL-13E-IAS-004	20G1672-04	Indoor air		TO-10A/EPA 680 Modified	
DL-4E-IAS-005	20G1672-05	Indoor air		TO-10A/EPA 680 Modified	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

TO-10A/EPA 680 Modified**Qualifications:****V-06**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:**Decachlorobiphenyl**

S051175-CCV2

Dichlorobiphenyls

20G1672-01[DL-Ambient-001], 20G1672-02[DL-23E-IAS-002], 20G1672-03[DL-19E-IAS-003], 20G1672-04[DL-13E-IAS-004], 20G1672-05[DL-4E-IAS-005],
B263667-BS1, B263667-BSD1, S051175-CCV1, S051175-CCV2

Monochlorobiphenyls

S051175-CCV2

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Dichlorobiphenyls**

B263667-BLK1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington

Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Amherst, MA

Date Received: 7/31/2020

Field Sample #: DL-Ambient-001

Sample ID: 20G1672-01

Sample Matrix: Indoor air

Sampled: 7/31/2020 14:02

Sample Description/Location:

Sub Description/Location:

Flow Controller ID:

Sample Type:

Air Volume L: 922

Work Order: 20G1672

TO-10A/EPA 680 Modified

Analyte	Total µg		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Monochlorobiphenyls	ND	0.0010	V-06	ND	0.0011	1	8/10/20	14:56	CLA
Dichlorobiphenyls	0.0016	0.0010		0.0017	0.0011	1	8/10/20	14:56	CLA
Trichlorobiphenyls	ND	0.0020		ND	0.0022	1	8/10/20	14:56	CLA
Tetrachlorobiphenyls	ND	0.0020		ND	0.0022	1	8/10/20	14:56	CLA
Pentachlorobiphenyls	ND	0.0020		ND	0.0022	1	8/10/20	14:56	CLA
Hexachlorobiphenyls	ND	0.0020		ND	0.0022	1	8/10/20	14:56	CLA
Heptachlorobiphenyls	ND	0.0030		ND	0.0033	1	8/10/20	14:56	CLA
Octachlorobiphenyls	ND	0.0030		ND	0.0033	1	8/10/20	14:56	CLA
Nonachlorobiphenyls	ND	0.0050		ND	0.0054	1	8/10/20	14:56	CLA
Decachlorobiphenyl	ND	0.0050		ND	0.0054	1	8/10/20	14:56	CLA
Total Polychlorinated biphenyls	0.0016			0.0017	1	8/10/20	14:56	CLA	
Surrogates	% Recovery			% REC Limits					
Tetrachloro-m-xylene	82.3			50-125			8/10/20	14:56	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Amherst, MA
Date Received: 7/31/2020
Field Sample #: DL-23E-IAS-002
Sample ID: 20G1672-02
Sample Matrix: Indoor air
Sampled: 7/31/2020 14:36

Sample Description/Location:
Sub Description/Location:

Work Order: 20G1672

Flow Controller ID:
Sample Type:
Air Volume L: 921

TO-10A/EPA 680 Modified

Analyte	Total µg		Flag/Qual	ug/m3		Dilution	Date/Time		
	Results	RL		Results	RL		Analyzed	Analyst	
Monochlorobiphenyls	0.061	0.0010	V-06	0.067	0.0011	1	8/10/20	15:34	CLA
Dichlorobiphenyls	0.055	0.0010		0.060	0.0011	1	8/10/20	15:34	CLA
Trichlorobiphenyls	0.12	0.0020		0.13	0.0022	1	8/10/20	15:34	CLA
Tetrachlorobiphenyls	0.23	0.0020		0.25	0.0022	1	8/10/20	15:34	CLA
Pentachlorobiphenyls	0.22	0.0020		0.24	0.0022	1	8/10/20	15:34	CLA
Hexachlorobiphenyls	0.073	0.0020		0.079	0.0022	1	8/10/20	15:34	CLA
Heptachlorobiphenyls	0.018	0.0030		0.020	0.0033	1	8/10/20	15:34	CLA
Octachlorobiphenyls	ND	0.0030		ND	0.0033	1	8/10/20	15:34	CLA
Nonachlorobiphenyls	ND	0.0050		ND	0.0054	1	8/10/20	15:34	CLA
Decachlorobiphenyl	ND	0.0050		ND	0.0054	1	8/10/20	15:34	CLA
Total Polychlorinated biphenyls	0.78			0.85		1	8/10/20	15:34	CLA

Surrogates	% Recovery	% REC Limits	
Tetrachloro-m-xylene	83.5	50-125	8/10/20 15:34

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Amherst, MA

Date Received: 7/31/2020

Field Sample #: DL-19E-IAS-003

Sample ID: 20G1672-03

Sample Matrix: Indoor air

Sampled: 7/31/2020 14:43

Sample Description/Location:

Sub Description/Location:

Work Order: 20G1672

Flow Controller ID:

Sample Type:

Air Volume L: 914

TO-10A/EPA 680 Modified

Analyte	Total µg		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Monochlorobiphenyls	0.062	0.0010	V-06	0.067	0.0011	1	8/10/20 16:11	CLA	
Dichlorobiphenyls	0.065	0.0010		0.071	0.0011	1	8/10/20 16:11	CLA	
Trichlorobiphenyls	0.16	0.0020		0.18	0.0022	1	8/10/20 16:11	CLA	
Tetrachlorobiphenyls	0.30	0.0020		0.33	0.0022	1	8/10/20 16:11	CLA	
Pentachlorobiphenyls	0.30	0.0020		0.33	0.0022	1	8/10/20 16:11	CLA	
Hexachlorobiphenyls	0.079	0.0020		0.087	0.0022	1	8/10/20 16:11	CLA	
Heptachlorobiphenyls	0.014	0.0030		0.015	0.0033	1	8/10/20 16:11	CLA	
Octachlorobiphenyls	ND	0.0030		ND	0.0033	1	8/10/20 16:11	CLA	
Nonachlorobiphenyls	ND	0.0050		ND	0.0055	1	8/10/20 16:11	CLA	
Decachlorobiphenyl	ND	0.0050		ND	0.0055	1	8/10/20 16:11	CLA	
Total Polychlorinated biphenyls	0.98			1.1	1	8/10/20 16:11	CLA		

Surrogates	% Recovery	% REC Limits	
Tetrachloro-m-xylene	86.0	50-125	8/10/20 16:11

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

ANALYTICAL RESULTS

Project Location: Amherst, MA

Date Received: 7/31/2020

Field Sample #: DL-13E-IAS-004

Sample ID: 20G1672-04

Sample Matrix: Indoor air

Sampled: 7/31/2020 14:52

Sample Description/Location:

Sub Description/Location:

Work Order: 20G1672

Flow Controller ID:

Sample Type:

Air Volume L: 922

TO-10A/EPA 680 Modified

Analyte	Total µg		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Monochlorobiphenyls	0.020	0.0010	V-06	0.022	0.0011	1	8/10/20	16:49	CLA
Dichlorobiphenyls	0.032	0.0010		0.035	0.0011	1	8/10/20	16:49	CLA
Trichlorobiphenyls	0.054	0.0020		0.059	0.0022	1	8/10/20	16:49	CLA
Tetrachlorobiphenyls	0.15	0.0020		0.16	0.0022	1	8/10/20	16:49	CLA
Pentachlorobiphenyls	0.15	0.0020		0.16	0.0022	1	8/10/20	16:49	CLA
Hexachlorobiphenyls	0.057	0.0020		0.062	0.0022	1	8/10/20	16:49	CLA
Heptachlorobiphenyls	0.013	0.0030		0.014	0.0033	1	8/10/20	16:49	CLA
Octachlorobiphenyls	ND	0.0030		ND	0.0033	1	8/10/20	16:49	CLA
Nonachlorobiphenyls	ND	0.0050		ND	0.0054	1	8/10/20	16:49	CLA
Decachlorobiphenyl	ND	0.0050		ND	0.0054	1	8/10/20	16:49	CLA
Total Polychlorinated biphenyls	0.47			0.51		1	8/10/20	16:49	CLA

Surrogates	% Recovery	% REC Limits	
Tetrachloro-m-xylene	89.3	50-125	8/10/20 16:49

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ANALYTICAL RESULTS

Project Location: Amherst, MA
Date Received: 7/31/2020
Field Sample #: DL-4E-IAS-005
Sample ID: 20G1672-05
Sample Matrix: Indoor air
Sampled: 7/31/2020 15:00

Sample Description/Location:
Sub Description/Location:

Flow Controller ID:
Sample Type:
Air Volume L: 944

Work Order: 20G1672

TO-10A/EPA 680 Modified

Analyte	Total µg		Flag/Qual	ug/m3		Dilution	Date/Time		
	Results	RL		Results	RL		Analyzed	Analyst	
Monochlorobiphenyls	0.041	0.0010	V-06	0.043	0.0011	1	8/10/20	17:26	CLA
Dichlorobiphenyls	0.047	0.0010		0.049	0.0011	1	8/10/20	17:26	CLA
Trichlorobiphenyls	0.079	0.0020		0.084	0.0021	1	8/10/20	17:26	CLA
Tetrachlorobiphenyls	0.16	0.0020		0.17	0.0021	1	8/10/20	17:26	CLA
Pentachlorobiphenyls	0.15	0.0020		0.15	0.0021	1	8/10/20	17:26	CLA
Hexachlorobiphenyls	0.057	0.0020		0.060	0.0021	1	8/10/20	17:26	CLA
Heptachlorobiphenyls	0.012	0.0030		0.013	0.0032	1	8/10/20	17:26	CLA
Octachlorobiphenyls	ND	0.0030		ND	0.0032	1	8/10/20	17:26	CLA
Nonachlorobiphenyls	ND	0.0050		ND	0.0053	1	8/10/20	17:26	CLA
Decachlorobiphenyl	ND	0.0050		ND	0.0053	1	8/10/20	17:26	CLA
Total Polychlorinated biphenyls	0.54			0.58		1	8/10/20	17:26	CLA

Surrogates	% Recovery	% REC Limits	
Tetrachloro-m-xylene	77.9	50-125	8/10/20 17:26

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Sample Extraction Data

Prep Method: SW-846 3540C Analytical Method: TO-10A/EPA 680 Modified

Lab Number [Field ID]	Batch	Initial [Cartridge	Final [mL]	Date
20G1672-01 [DL-Ambient-001]	B263667	1.00	1.00	08/06/20
20G1672-02 [DL-23E-IAS-002]	B263667	1.00	1.00	08/06/20
20G1672-03 [DL-19E-IAS-003]	B263667	1.00	1.00	08/06/20
20G1672-04 [DL-13E-IAS-004]	B263667	1.00	1.00	08/06/20
20G1672-05 [DL-4E-IAS-005]	B263667	1.00	1.00	08/06/20

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
PCB Homologues by GC/MS with Soxhlet Extraction - Quality Control

Analyte	Total µg		ug/m3		Spike Level	Source	%REC	%REC	RPD	RPD	Flag/Qual
	Results	RL	Results	RL	Total µg	Result	%REC	Limits	RPD	Limit	
Batch B263667 - SW-846 3540C											
Blank (B263667-BLK1)					Prepared: 08/06/20 Analyzed: 08/10/20						
Monochlorobiphenyls	ND	0.0010									V-20
Dichlorobiphenyls	ND	0.0010									
Trichlorobiphenyls	ND	0.0020									
Tetrachlorobiphenyls	ND	0.0020									
Pentachlorobiphenyls	ND	0.0020									
Hexachlorobiphenyls	ND	0.0020									
Heptachlorobiphenyls	ND	0.0030									
Octachlorobiphenyls	ND	0.0030									
Nonachlorobiphenyls	ND	0.0050									
Decachlorobiphenyl	ND	0.0050									
Total Polychlorinated biphenyls	0.0										
Surrogate: Tetrachloro-m-xylene	0.165				0.200		82.5	50-125			
LCS (B263667-BS1)					Prepared: 08/06/20 Analyzed: 08/10/20						
Monochlorobiphenyls	0.13	0.0010			0.200		67.1	40-140			V-06
Dichlorobiphenyls	0.15	0.0010			0.200		76.5	40-140			
Trichlorobiphenyls	0.13	0.0020			0.200		63.6	40-140			
Tetrachlorobiphenyls	0.25	0.0020			0.400		63.5	40-140			
Pentachlorobiphenyls	0.26	0.0020			0.400		65.9	40-140			
Hexachlorobiphenyls	0.26	0.0020			0.400		66.2	40-140			
Heptachlorobiphenyls	0.40	0.0030			0.600		67.0	40-140			
Octachlorobiphenyls	0.41	0.0030			0.600		68.8	40-140			
Nonachlorobiphenyls	0.81	0.0050			1.00		80.6	40-140			
Decachlorobiphenyl	0.84	0.0050			1.00		83.6	40-140			
Surrogate: Tetrachloro-m-xylene	0.171				0.200		85.4	50-125			
LCS Dup (B263667-BSD1)					Prepared: 08/06/20 Analyzed: 08/10/20						
Monochlorobiphenyls	0.15	0.0010			0.200		74.8	40-140	10.7	50	V-06
Dichlorobiphenyls	0.16	0.0010			0.200		82.1	40-140	7.05	50	
Trichlorobiphenyls	0.14	0.0020			0.200		68.1	40-140	6.85	50	
Tetrachlorobiphenyls	0.27	0.0020			0.400		68.2	40-140	7.05	50	
Pentachlorobiphenyls	0.27	0.0020			0.400		67.7	40-140	2.68	50	
Hexachlorobiphenyls	0.28	0.0020			0.400		70.9	40-140	6.94	50	
Heptachlorobiphenyls	0.43	0.0030			0.600		71.9	40-140	7.05	50	
Octachlorobiphenyls	0.44	0.0030			0.600		73.0	40-140	5.95	50	
Nonachlorobiphenyls	0.85	0.0050			1.00		84.8	40-140	5.10	50	
Decachlorobiphenyl	0.86	0.0050			1.00		86.3	40-140	3.10	50	
Surrogate: Tetrachloro-m-xylene	0.195				0.200		97.6	50-125			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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INTERNAL STANDARD AREA AND RT SUMMARY

TO-10A/EPA 680 Modified

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
DL-Ambient-001 (20G1672-01)									
Lab File ID: F2022304.D					Analyzed: 08/10/20 14:56				
Phenanthrene-d10	958097	20.389	879458	20.389	109	50 - 200	0.0000	+/-0.50	
Chrysene-d12	755444	28.103	671365	28.103	113	50 - 200	0.0000	+/-0.50	
DL-23E-IAS-002 (20G1672-02)									
Lab File ID: F2022305.D					Analyzed: 08/10/20 15:34				
Phenanthrene-d10	1041041	20.389	879458	20.389	118	50 - 200	0.0000	+/-0.50	
Chrysene-d12	921146	28.111	671365	28.103	137	50 - 200	0.0080	+/-0.50	
DL-19E-IAS-003 (20G1672-03)									
Lab File ID: F2022306.D					Analyzed: 08/10/20 16:11				
Phenanthrene-d10	1061500	20.389	879458	20.389	121	50 - 200	0.0000	+/-0.50	
Chrysene-d12	933358	28.111	671365	28.103	139	50 - 200	0.0080	+/-0.50	
DL-13E-IAS-004 (20G1672-04)									
Lab File ID: F2022307.D					Analyzed: 08/10/20 16:49				
Phenanthrene-d10	1006876	20.389	879458	20.389	114	50 - 200	0.0000	+/-0.50	
Chrysene-d12	834230	28.103	671365	28.103	124	50 - 200	0.0000	+/-0.50	
DL-4E-IAS-005 (20G1672-05)									
Lab File ID: F2022308.D					Analyzed: 08/10/20 17:26				
Phenanthrene-d10	1042710	20.389	879458	20.389	119	50 - 200	0.0000	+/-0.50	
Chrysene-d12	858428	28.103	671365	28.103	128	50 - 200	0.0000	+/-0.50	
LCS (B263667-BS1)									
Lab File ID: F2022312.D					Analyzed: 08/10/20 19:56				
Phenanthrene-d10	1065048	20.389	879458	20.389	121	50 - 200	0.0000	+/-0.50	
Chrysene-d12	928909	28.111	671365	28.103	138	50 - 200	0.0080	+/-0.50	
LCS Dup (B263667-BSD1)									
Lab File ID: F2022313.D					Analyzed: 08/10/20 20:34				
Phenanthrene-d10	1037029	20.389	879458	20.389	118	50 - 200	0.0000	+/-0.50	
Chrysene-d12	867775	28.111	671365	28.103	129	50 - 200	0.0080	+/-0.50	
Blank (B263667-BLK1)									
Lab File ID: F2022314.D					Analyzed: 08/10/20 21:11				
Phenanthrene-d10	943819	20.389	879458	20.389	107	50 - 200	0.0000	+/-0.50	
Chrysene-d12	787758	28.104	671365	28.103	117	50 - 200	0.0010	+/-0.50	

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CONTINUING CALIBRATION CHECK

COMPOUND	TYPE			RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
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No certified Analyses included in this Report

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2021
RI	Rhode Island Department of Health	LAO00112	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2021
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before
Relinquishing Over
Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 278 Rev 6 2017

**Air Media Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False
Statement will be brought to the attention of the Client - State True or False**

Client Woodward-Curran

Received By RLT Date 7/31/20 Time 1617
How were the samples received? In Cooler T On Ice T No Ice _____
In Box _____ Ambient _____ Melted Ice _____
Were samples within Temperature Compliance? 2-6°C T By Gun # 1 Actual Temp - 44°C
By Blank # _____ Actual Temp - _____
Was Custody Seal Intact? NA Were Samples Tampered with? NA
Was COC Relinquished? T Does Chain Agree With Samples? T
Are there any loose caps/valves on any samples? F
Is COC in ink/ Legible? T
Did COC Include all Client T Analysis T Sampler Name T
Pertinent Information? Project T ID's T Collection Dates/Times T
Are Sample Labels filled out and legible? T
Are there Rushes? F Who was notified? _____
Samples are received within holding time? T
Proper Media Used? T Individually Certified Cans? NA
Are there Trip Blanks? F Is there enough Volume? T

Containers:	#	Size	Regulator	Duration	Accessories:		
Summa Cans					Nut/Ferrule		IC Train
Tedlar Bags					Tubing		
TO-17 Tubes					T-Connector		Shipping Charges
Radiello					Syringe		
Pufs/TO-11s	<u>5</u>				Tedlar		

Can #'s					Reg #'s			
Unused Media					Pufs/TO-17's			
					<u>072820-01</u>			
					<u>-02</u>			
					<u>-03</u>			
					<u>-04</u>			
					<u>-05</u>			

Comments:

August 31, 2020

George Franklin
Woodard & Curran - Andover, MA
40 Shattuck Road., Suite 110
Andover, MA 01810

Project Location: Amherst, MA
Client Job Number:
Project Number: 225695.05
Laboratory Work Order Number: 20H1157

Enclosed are results of analyses for samples received by the laboratory on August 21, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Meghan E. Kelley". The signature is written in a cursive style with a large, flowing "M" and a long, sweeping tail on the "y".

Meghan E. Kelley
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Woodard & Curran - Andover, MA
40 Shattuck Road., Suite 110
Andover, MA 01810
ATTN: George Franklin

REPORT DATE: 8/31/2020

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 225695.05

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 20H1157

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Amherst, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
LTM-MR-VWBV-701	20H1157-01	Wipe		SW-846 8082A	
LTM-MR-VWBV-702	20H1157-02	Wipe		SW-846 8082A	
LTM-MR-VWBV-703	20H1157-03	Wipe		SW-846 8082A	
LTM-MR-VWBV-704	20H1157-04	Wipe		SW-846 8082A	
LTM-MR-VWBH-705	20H1157-05	Wipe		SW-846 8082A	
LTM-MR-VWBH-706	20H1157-06	Wipe		SW-846 8082A	
LTM-MR-VWBH-707	20H1157-07	Wipe		SW-846 8082A	
LTM-MR-VWBH-708	20H1157-08	Wipe		SW-846 8082A	
LTM-BR-VWBV-709	20H1157-09	Wipe		SW-846 8082A	
LTM-BR-VWBV-710	20H1157-10	Wipe		SW-846 8082A	
LTM-BR-VWBV-711	20H1157-11	Wipe		SW-846 8082A	
LTM-BR-VWBV-712	20H1157-12	Wipe		SW-846 8082A	
LTM-BR-VWBH-713	20H1157-13	Wipe		SW-846 8082A	
LTM-BR-VWBH-714	20H1157-14	Wipe		SW-846 8082A	
LTM-BR-VWBH-715	20H1157-15	Wipe		SW-846 8082A	
LTM-BR-VWBH-716	20H1157-16	Wipe		SW-846 8082A	
LTM-CR-VWBV-717	20H1157-17	Wipe		SW-846 8082A	
LTM-CR-VWBV-718	20H1157-18	Wipe		SW-846 8082A	
LTM-CR-VWBV-719	20H1157-19	Wipe		SW-846 8082A	
LTM-CR-VWBV-720	20H1157-20	Wipe		SW-846 8082A	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa Worthington", is written over a light pink rectangular background.

Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBV-701

Sampled: 8/20/2020 11:32

Sample ID: 20H1157-01

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:21	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 18:21	
Decachlorobiphenyl [2]	104	30-150						8/29/20 18:21	
Tetrachloro-m-xylene [1]	96.7	30-150						8/29/20 18:21	
Tetrachloro-m-xylene [2]	97.5	30-150						8/29/20 18:21	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBV-702

Sampled: 8/20/2020 11:42

Sample ID: 20H1157-02

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1254 [2]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:38	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 18:38	
Decachlorobiphenyl [2]	103	30-150						8/29/20 18:38	
Tetrachloro-m-xylene [1]	97.3	30-150						8/29/20 18:38	
Tetrachloro-m-xylene [2]	98.2	30-150						8/29/20 18:38	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBV-703

Sampled: 8/20/2020 11:50

Sample ID: 20H1157-03

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:56	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150							
Decachlorobiphenyl [2]	108	30-150							
Tetrachloro-m-xylene [1]	100	30-150							
Tetrachloro-m-xylene [2]	102	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBV-704

Sampled: 8/20/2020 11:53

Sample ID: 20H1157-04

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:13	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	109	30-150							
Decachlorobiphenyl [2]	108	30-150							
Tetrachloro-m-xylene [1]	101	30-150							
Tetrachloro-m-xylene [2]	102	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBH-705

Sampled: 8/20/2020 11:36

Sample ID: 20H1157-05

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:31	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	109	30-150							
Decachlorobiphenyl [2]	108	30-150							
Tetrachloro-m-xylene [1]	101	30-150							
Tetrachloro-m-xylene [2]	103	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBH-706

Sampled: 8/20/2020 11:45

Sample ID: 20H1157-06

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1254 [2]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 19:48	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150						8/29/20 19:48	
Decachlorobiphenyl [2]	106	30-150						8/29/20 19:48	
Tetrachloro-m-xylene [1]	100	30-150						8/29/20 19:48	
Tetrachloro-m-xylene [2]	102	30-150						8/29/20 19:48	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBH-707

Sampled: 8/20/2020 11:51

Sample ID: 20H1157-07

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:06	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	108	30-150						8/29/20 20:06	
Decachlorobiphenyl [2]	107	30-150						8/29/20 20:06	
Tetrachloro-m-xylene [1]	102	30-150						8/29/20 20:06	
Tetrachloro-m-xylene [2]	104	30-150						8/29/20 20:06	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWBH-708

Sampled: 8/20/2020 11:54

Sample ID: 20H1157-08

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:23	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150							
Decachlorobiphenyl [2]	106	30-150							
Tetrachloro-m-xylene [1]	98.4	30-150							
Tetrachloro-m-xylene [2]	99.6	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBV-709

Sampled: 8/20/2020 12:18

Sample ID: 20H1157-09

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1248 [2]	0.45	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1254 [1]	0.34	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:41	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150							
Decachlorobiphenyl [2]	107	30-150							
Tetrachloro-m-xylene [1]	100	30-150							
Tetrachloro-m-xylene [2]	102	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBV-710

Sampled: 8/20/2020 12:24

Sample ID: 20H1157-10

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 20:58	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150							
Decachlorobiphenyl [2]	110	30-150							
Tetrachloro-m-xylene [1]	99.3	30-150							
Tetrachloro-m-xylene [2]	100	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBV-711

Sampled: 8/20/2020 12:29

Sample ID: 20H1157-11

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:21	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	109	30-150						8/29/20 22:21	
Decachlorobiphenyl [2]	110	30-150						8/29/20 22:21	
Tetrachloro-m-xylene [1]	101	30-150						8/29/20 22:21	
Tetrachloro-m-xylene [2]	101	30-150						8/29/20 22:21	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBV-712

Sampled: 8/20/2020 12:32

Sample ID: 20H1157-12

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:38	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 22:38	
Decachlorobiphenyl [2]	107	30-150						8/29/20 22:38	
Tetrachloro-m-xylene [1]	94.9	30-150						8/29/20 22:38	
Tetrachloro-m-xylene [2]	94.7	30-150						8/29/20 22:38	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBH-713

Sampled: 8/20/2020 12:18

Sample ID: 20H1157-13

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 22:56	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	108	30-150							
Decachlorobiphenyl [2]	109	30-150							
Tetrachloro-m-xylene [1]	99.5	30-150							
Tetrachloro-m-xylene [2]	100	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBH-714

Sampled: 8/20/2020 12:24

Sample ID: 20H1157-14

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:13	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	109	30-150							
Decachlorobiphenyl [2]	111	30-150							
Tetrachloro-m-xylene [1]	102	30-150							
Tetrachloro-m-xylene [2]	103	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBH-715

Sampled: 8/20/2020 12:29

Sample ID: 20H1157-15

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:31	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	109	30-150							
Decachlorobiphenyl [2]	110	30-150							
Tetrachloro-m-xylene [1]	96.3	30-150							
Tetrachloro-m-xylene [2]	96.9	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWBH-716

Sampled: 8/20/2020 12:32

Sample ID: 20H1157-16

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 23:48	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	108	30-150							
Decachlorobiphenyl [2]	109	30-150							
Tetrachloro-m-xylene [1]	101	30-150							
Tetrachloro-m-xylene [2]	103	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBV-717

Sampled: 8/20/2020 12:36

Sample ID: 20H1157-17

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:06	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	108	30-150						8/30/20 0:06	
Decachlorobiphenyl [2]	110	30-150						8/30/20 0:06	
Tetrachloro-m-xylene [1]	96.7	30-150						8/30/20 0:06	
Tetrachloro-m-xylene [2]	97.6	30-150						8/30/20 0:06	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBV-718

Sampled: 8/20/2020 12:29

Sample ID: 20H1157-18

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:23	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	111	30-150						8/30/20 0:23	
Decachlorobiphenyl [2]	113	30-150						8/30/20 0:23	
Tetrachloro-m-xylene [1]	99.2	30-150						8/30/20 0:23	
Tetrachloro-m-xylene [2]	100	30-150						8/30/20 0:23	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBV-719

Sampled: 8/20/2020 12:43

Sample ID: 20H1157-19

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:41	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150						8/30/20 0:41	
Decachlorobiphenyl [2]	111	30-150						8/30/20 0:41	
Tetrachloro-m-xylene [1]	95.1	30-150						8/30/20 0:41	
Tetrachloro-m-xylene [2]	96.0	30-150						8/30/20 0:41	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1157

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBV-720

Sampled: 8/20/2020 12:46

Sample ID: 20H1157-20

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/30/20 0:58	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150						8/30/20 0:58	
Decachlorobiphenyl [2]	108	30-150						8/30/20 0:58	
Tetrachloro-m-xylene [1]	93.3	30-150						8/30/20 0:58	
Tetrachloro-m-xylene [2]	94.4	30-150						8/30/20 0:58	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data**

Prep Method: SW-846 3540C Analytical Method: SW-846 8082A

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
20H1157-01 [LTM-MR-VWBV-701]	B265145	1.00	10.0	08/26/20
20H1157-02 [LTM-MR-VWBV-702]	B265145	1.00	10.0	08/26/20
20H1157-03 [LTM-MR-VWBV-703]	B265145	1.00	10.0	08/26/20
20H1157-04 [LTM-MR-VWBV-704]	B265145	1.00	10.0	08/26/20
20H1157-05 [LTM-MR-VWBH-705]	B265145	1.00	10.0	08/26/20
20H1157-06 [LTM-MR-VWBH-706]	B265145	1.00	10.0	08/26/20
20H1157-07 [LTM-MR-VWBH-707]	B265145	1.00	10.0	08/26/20
20H1157-08 [LTM-MR-VWBH-708]	B265145	1.00	10.0	08/26/20
20H1157-09 [LTM-BR-VWBV-709]	B265145	1.00	10.0	08/26/20
20H1157-10 [LTM-BR-VWBV-710]	B265145	1.00	10.0	08/26/20
20H1157-11 [LTM-BR-VWBV-711]	B265145	1.00	10.0	08/26/20
20H1157-12 [LTM-BR-VWBV-712]	B265145	1.00	10.0	08/26/20
20H1157-13 [LTM-BR-VWBH-713]	B265145	1.00	10.0	08/26/20
20H1157-14 [LTM-BR-VWBH-714]	B265145	1.00	10.0	08/26/20
20H1157-15 [LTM-BR-VWBH-715]	B265145	1.00	10.0	08/26/20
20H1157-16 [LTM-BR-VWBH-716]	B265145	1.00	10.0	08/26/20
20H1157-17 [LTM-CR-VWBV-717]	B265145	1.00	10.0	08/26/20
20H1157-18 [LTM-CR-VWBV-718]	B265145	1.00	10.0	08/26/20
20H1157-19 [LTM-CR-VWBV-719]	B265145	1.00	10.0	08/26/20
20H1157-20 [LTM-CR-VWBV-720]	B265145	1.00	10.0	08/26/20

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B265145 - SW-846 3540C
Blank (B265145-BLK1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	ND	0.20	µg/Wipe							
Aroclor-1016 [2C]	ND	0.20	µg/Wipe							
Aroclor-1221	ND	0.20	µg/Wipe							
Aroclor-1221 [2C]	ND	0.20	µg/Wipe							
Aroclor-1232	ND	0.20	µg/Wipe							
Aroclor-1232 [2C]	ND	0.20	µg/Wipe							
Aroclor-1242	ND	0.20	µg/Wipe							
Aroclor-1242 [2C]	ND	0.20	µg/Wipe							
Aroclor-1248	ND	0.20	µg/Wipe							
Aroclor-1248 [2C]	ND	0.20	µg/Wipe							
Aroclor-1254	ND	0.20	µg/Wipe							
Aroclor-1254 [2C]	ND	0.20	µg/Wipe							
Aroclor-1260	ND	0.20	µg/Wipe							
Aroclor-1260 [2C]	ND	0.20	µg/Wipe							
Aroclor-1262	ND	0.20	µg/Wipe							
Aroclor-1262 [2C]	ND	0.20	µg/Wipe							
Aroclor-1268	ND	0.20	µg/Wipe							
Aroclor-1268 [2C]	ND	0.20	µg/Wipe							
Surrogate: Decachlorobiphenyl	2.22		µg/Wipe	2.00		111	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.17		µg/Wipe	2.00		108	30-150			
Surrogate: Tetrachloro-m-xylene	1.96		µg/Wipe	2.00		97.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.89		µg/Wipe	2.00		94.5	30-150			

LCS (B265145-BS1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	0.51	0.20	µg/Wipe	0.500		101	40-140			
Aroclor-1016 [2C]	0.44	0.20	µg/Wipe	0.500		87.6	40-140			
Aroclor-1260	0.48	0.20	µg/Wipe	0.500		95.3	40-140			
Aroclor-1260 [2C]	0.44	0.20	µg/Wipe	0.500		87.1	40-140			
Surrogate: Decachlorobiphenyl	2.24		µg/Wipe	2.00		112	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.19		µg/Wipe	2.00		110	30-150			
Surrogate: Tetrachloro-m-xylene	2.01		µg/Wipe	2.00		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.93		µg/Wipe	2.00		96.6	30-150			

LCS Dup (B265145-BSD1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	0.49	0.20	µg/Wipe	0.500		97.4	40-140	3.90	30	
Aroclor-1016 [2C]	0.42	0.20	µg/Wipe	0.500		83.7	40-140	4.52	30	
Aroclor-1260	0.45	0.20	µg/Wipe	0.500		90.8	40-140	4.78	30	
Aroclor-1260 [2C]	0.40	0.20	µg/Wipe	0.500		80.8	40-140	7.57	30	
Surrogate: Decachlorobiphenyl	2.18		µg/Wipe	2.00		109	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.15		µg/Wipe	2.00		107	30-150			
Surrogate: Tetrachloro-m-xylene	1.98		µg/Wipe	2.00		99.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.92		µg/Wipe	2.00		96.0	30-150			

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LTM-BR-VWBV-709

Lab Sample ID: 20H1157-09 Date(s) Analyzed: 08/29/2020 08/29/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1248	1	0.000	0.000	0.000	0.43	
	2	0.000	0.000	0.000	0.45	4.6
Aroclor-1254	1	0.000	0.000	0.000	0.34	
	2	0.000	0.000	0.000	0.33	3.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B265145-BS1 Date(s) Analyzed: 08/29/2020 08/29/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.51	
	2	0.000	0.000	0.000	0.44	14.7
Aroclor-1260	1	0.000	0.000	0.000	0.48	
	2	0.000	0.000	0.000	0.44	8.7

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**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES***SW-846 8082A***LCS Dup**Lab Sample ID: B265145-BSD1 Date(s) Analyzed: 08/29/2020 08/29/2020

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.49	
	2	0.000	0.000	0.000	0.42	15.4
Aroclor-1260	1	0.000	0.000	0.000	0.45	
	2	0.000	0.000	0.000	0.40	11.8

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
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No certified Analyses included in this Report

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2021
RI	Rhode Island Department of Health	LAO00112	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2021
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	10/1/2020



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Woodard and Curran

Address: 40 Shattuck Road Andover, MA

Phone: 978 482-7867

Project Name: UMass Amherst LT Monitoring

Project Location: Amherst MA

Project Number: 225695.05

Project Manager: George Franklin

Con-Test Quote Name/Number: W&C Standard Pricing

Invoice Recipient: George Franklin

Sampled By: George Franklin

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

Doc # 381 Rev 1_03242017

39 Spruce Street
East Longmeadow, MA 01028

Page _ of _

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: 5 Day TAT
Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐
Data Delivery
Format: PDF ☒ EXCEL ☐
Other:
CLP Like Data Pkg Required: ☐
Email To: George Franklin
Fax To #:

Con-Test Work Order #	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code
1	LTM-MR-VWBV-701	8/20/2020	1152		x	O	U
2	LTM-MR-VWBV-702	8/20/2020	1142		x	O	U
3	LTM-MR-VWBV-703	8/20/2020	1150		x	O	U
4	LTM-MR-VWBV-704	8/20/2020	1153		x	O	U
5	LTM-MR-VWBH-705	8/20/2020	1136		x	O	U
6	LTM-MR-VWBH-706	8/20/2020	1145		x	O	U
7	LTM-MR-VWBH-707	8/20/2020	1151		x	O	U
8	LTM-MR-VWBH-708	8/20/2020	1154		x	O	U
9	LTM-BR-VWBV-709	8/20/2020	1212		x	O	U
10	LTM-BR-VWBV-710	8/20/2020	1224		x	O	U

Comments: PCBs via USEPA method 8082A with Soxhlet Extraction (3540C)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature) Date/Time: 8/21/20	Detection Limit Requirements MA <input type="checkbox"/> MA MCP Required MCP Certification Form Required	Special Requirements MA MCP Required MCP Certification Form Required CT RCP Required RCP Certification Form Required
Received by: (signature) Date/Time: 8/21/20 1315	CT <input type="checkbox"/> CT RCP Required RCP Certification Form Required	
Relinquished by: (signature) Date/Time: 8/21/20 1605	Other: <input type="checkbox"/> MA State DW Required	
Relinquished by: (signature) Date/Time: 8/21/20 1605	PWSID #	
Relinquished by: (signature) Date/Time: 8/21/20 1605	Project Entity <input type="checkbox"/> Government <input type="checkbox"/> Federal <input type="checkbox"/> City	Municipality <input type="checkbox"/> WRTA <input type="checkbox"/> MWRA <input type="checkbox"/> School <input type="checkbox"/> MBTA
Relinquished by: (signature) Date/Time: 8/21/20 1605	Other <input type="checkbox"/> Chromatogram <input type="checkbox"/> AIHA-LAP, LLC	PCB ONLY <input checked="" type="checkbox"/> Soxhlet <input type="checkbox"/> Non Soxhlet



Phone: 413-525-2332

Fax: 413-525-6405

Email: info@contestlabs.com

Woodard and Curran

Company Name:

Address: 40 Shattuck Road Andover, MA

Phone: 978-482-7867

Project Name:

UMass Amherst LT Monitoring

Project Location:

Amherst MA

Project Number:

225695.05

Project Manager:

George Franklin

Con-Test Quote Name/Number:

WBC Standard Pricing

Invoice Recipient:

George Franklin

Sampled By:

George Franklin

Doc # 381 Rev 1_03242017

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 2 of 4

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: 5 Day TAT
Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐
Data Delivery
Format: PDF ☒ EXCEL ☐
Other:
CLP Like Data Pkg Required: ☐
Email To: George Franklin
Fax To #:

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code
11	LTM-BR-VWBV-711	8/20/2020	1229		X	O	U
12	LTM-BR-VWBV-712	8/20/2020	1232		X	O	U
13	LTM-BR-VWBH-713	8/20/2020	1212		X	O	U
14	LTM-BR-VWBH-714	8/20/2020	1214		X	O	U
15	LTM-BR-VWBH-715	8/20/2020	1229		X	O	U
16	LTM-BR-VWBH-716	8/20/2020	1232		X	O	U
17	LTM-CR-VWBV-717	8/20/2020	1232		X	O	U
18	LTM-CR-VWBV-718	8/20/2020	1229		X	O	U
19	LTM-CR-VWBV-719	8/20/2020	1243		X	O	U
20	LTM-CR-VWBV-720	8/20/2020	1242		X	O	U

Comments: PCBs via USEPA method 8082A with Soxhlet Extraction (3540C)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 8/21/20	Detection Limit Requirements	MA	Special Requirements	MA MCP Required
Received by: (signature)	Date/Time: 8/21/20			MCP Certification Form Required	
Relinquished by: (signature)	Date/Time: 8/21/20			CT RCP Required	
Received by: (signature)	Date/Time: 8/21/20			RCP Certification Form Required	
Relinquished by: (signature)	Date/Time: 8/21/20			MA State DW Required	
Received by: (signature)	Date/Time: 8/21/20			PWSID #	
Relinquished by: (signature)	Date/Time: 8/21/20	Project Entity	Government <input type="checkbox"/> Federal <input type="checkbox"/> City <input type="checkbox"/>	Municipality <input type="checkbox"/> 21 J <input type="checkbox"/> Brownfield <input type="checkbox"/>	MWRA <input type="checkbox"/> School <input type="checkbox"/> MBTA <input type="checkbox"/>
Received by: (signature)	Date/Time: 8/21/20			WRTA <input type="checkbox"/>	Chromatogram <input type="checkbox"/>
Relinquished by: (signature)	Date/Time: 8/21/20			Other <input type="checkbox"/>	AHA-LAP, LLC <input type="checkbox"/>



I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 - Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False
Statement will be brought to the attention of the Client - State True or False

Client W and C
Received By GA Date 9/21/20 Time 1605

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 4 Actual Temp - 5.7
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA
Was COC Relinquished? T Does Chain Agree With Samples? F

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all Client T Analysis T Sampler Name T
pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? F Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic	
HCL-		500 mL Amb.		500 mL Plastic	
Meoh-		250 mL Amb.		250 mL Plastic	
Bisulfate-		Flashpoint		Col./Bacteria	
DI-		Other Glass		Other Plastic	
Thiosulfate-		SOC Kit		Plastic Bag	
Sulfuric-		Perchlorate		Ziplock	

Unused Media

Vials	#	Containers:	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic	
HCL-		500 mL Amb.		500 mL Plastic	
Meoh-		250 mL Amb.		250 mL Plastic	
Bisulfate-		Col./Bacteria		Flashpoint	
DI-		Other Plastic		Other Glass	
Thiosulfate-		SOC Kit		Plastic Bag	
Sulfuric-		Perchlorate		Ziplock	

Comments:

Received 2 extra samples

August 31, 2020

George Franklin
Woodard & Curran - Andover, MA
40 Shattuck Road., Suite 110
Andover, MA 01810

Project Location: Amherst, MA
Client Job Number:
Project Number: 225695.05
Laboratory Work Order Number: 20H1156

Enclosed are results of analyses for samples received by the laboratory on August 21, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Meghan E. Kelley". The signature is written in a cursive style with a large, flowing "M" and a long, sweeping underline.

Meghan E. Kelley
Project Manager

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Woodard & Curran - Andover, MA
40 Shattuck Road., Suite 110
Andover, MA 01810
ATTN: George Franklin

REPORT DATE: 8/31/2020

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 225695.05

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 20H1156

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Amherst, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
LTM-CR-VWBH-721	20H1156-01	Wipe		SW-846 8082A	
LTM-CR-VWBH-722	20H1156-02	Wipe		SW-846 8082A	
LTM-CR-VWBH-723	20H1156-03	Wipe		SW-846 8082A	
LTM-CR-VWBH-724	20H1156-04	Wipe		SW-846 8082A	
LTM-CR-VWC-725	20H1156-05	Wipe		SW-846 8082A	
LTM-CR-VWC-726	20H1156-06	Wipe		SW-846 8082A	
LTM-MR-VWC-727	20H1156-07	Wipe		SW-846 8082A	
LTM-MR-VWC-728	20H1156-08	Wipe		SW-846 8082A	
LTM-BR-VWC-729	20H1156-09	Wipe		SW-846 8082A	
LTM-MR-VWW-730	20H1156-10	Wipe		SW-846 8082A	
LTM-MR-VWW-731	20H1156-11	Wipe		SW-846 8082A	
LTM-BR-VWW-732	20H1156-12	Wipe		SW-846 8082A	
LTM-BR-VWWD-733	20H1156-13	Wipe		SW-846 8082A	
LTM-CR-VWBHD-734	20H1156-14	Wipe		SW-846 8082A	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa Worthington", is written over a light gray rectangular background.

Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBH-721

Sampled: 8/20/2020 12:36

Sample ID: 20H1156-01

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 13:49	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150						8/29/20 13:49	
Decachlorobiphenyl [2]	116	30-150						8/29/20 13:49	
Tetrachloro-m-xylene [1]	91.2	30-150						8/29/20 13:49	
Tetrachloro-m-xylene [2]	101	30-150						8/29/20 13:49	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBH-722

Sampled: 8/20/2020 12:39

Sample ID: 20H1156-02

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:06	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	108	30-150						8/29/20 14:06	
Decachlorobiphenyl [2]	115	30-150						8/29/20 14:06	
Tetrachloro-m-xylene [1]	88.7	30-150						8/29/20 14:06	
Tetrachloro-m-xylene [2]	97.9	30-150						8/29/20 14:06	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBH-723

Sampled: 8/20/2020 12:43

Sample ID: 20H1156-03

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:24	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	111	30-150							
Decachlorobiphenyl [2]	117	30-150							
Tetrachloro-m-xylene [1]	89.0	30-150							
Tetrachloro-m-xylene [2]	98.9	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBH-724

Sampled: 8/20/2020 12:46

Sample ID: 20H1156-04

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 14:42	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	107	30-150							
Decachlorobiphenyl [2]	115	30-150							
Tetrachloro-m-xylene [1]	88.5	30-150							
Tetrachloro-m-xylene [2]	97.7	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWC-725

Sampled: 8/20/2020 10:55

Sample ID: 20H1156-05

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1254 [1]	0.37	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:00	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 15:00	
Decachlorobiphenyl [2]	112	30-150						8/29/20 15:00	
Tetrachloro-m-xylene [1]	89.4	30-150						8/29/20 15:00	
Tetrachloro-m-xylene [2]	99.5	30-150						8/29/20 15:00	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWC-726

Sampled: 8/20/2020 10:58

Sample ID: 20H1156-06

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:17	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	98.1	30-150							
Decachlorobiphenyl [2]	107	30-150							
Tetrachloro-m-xylene [1]	82.0	30-150							
Tetrachloro-m-xylene [2]	90.4	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWC-727

Sampled: 8/20/2020 12:02

Sample ID: 20H1156-07

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1248 [2]	0.38	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1254 [2]	0.44	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:35	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 15:35	
Decachlorobiphenyl [2]	111	30-150						8/29/20 15:35	
Tetrachloro-m-xylene [1]	86.2	30-150						8/29/20 15:35	
Tetrachloro-m-xylene [2]	95.9	30-150						8/29/20 15:35	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWC-728

Sampled: 8/20/2020 12:04

Sample ID: 20H1156-08

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 15:52	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150							
Decachlorobiphenyl [2]	117	30-150							
Tetrachloro-m-xylene [1]	89.8	30-150							
Tetrachloro-m-xylene [2]	99.3	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWC-729

Sampled: 8/20/2020 12:12

Sample ID: 20H1156-09

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1248 [2]	0.27	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1254 [2]	0.53	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:10	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150							
Decachlorobiphenyl [2]	116	30-150							
Tetrachloro-m-xylene [1]	83.2	30-150							
Tetrachloro-m-xylene [2]	92.9	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWW-730

Sampled: 8/20/2020 12:02

Sample ID: 20H1156-10

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 16:28	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	106	30-150						8/29/20 16:28	
Decachlorobiphenyl [2]	113	30-150						8/29/20 16:28	
Tetrachloro-m-xylene [1]	88.6	30-150						8/29/20 16:28	
Tetrachloro-m-xylene [2]	98.2	30-150						8/29/20 16:28	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-MR-VWW-731

Sampled: 8/20/2020 12:06

Sample ID: 20H1156-11

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 17:52	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	102	30-150							
Decachlorobiphenyl [2]	111	30-150							
Tetrachloro-m-xylene [1]	85.8	30-150							
Tetrachloro-m-xylene [2]	95.0	30-150							

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWW-732

Sampled: 8/20/2020 12:11

Sample ID: 20H1156-12

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:09	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	105	30-150						8/29/20 18:09	
Decachlorobiphenyl [2]	112	30-150						8/29/20 18:09	
Tetrachloro-m-xylene [1]	83.8	30-150						8/29/20 18:09	
Tetrachloro-m-xylene [2]	92.9	30-150						8/29/20 18:09	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-BR-VWWD-733

Sampled: 8/20/2020 12:11

Sample ID: 20H1156-13

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:27	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	105	30-150						8/29/20 18:27	
Decachlorobiphenyl [2]	112	30-150						8/29/20 18:27	
Tetrachloro-m-xylene [1]	84.9	30-150						8/29/20 18:27	
Tetrachloro-m-xylene [2]	94.2	30-150						8/29/20 18:27	

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Project Location: Amherst, MA

Sample Description:

Work Order: 20H1156

Date Received: 8/21/2020

Field Sample #: LTM-CR-VWBHD-734

Sampled: 8/20/2020 00:00

Sample ID: 20H1156-14

Sample Matrix: Wipe

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1221 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1232 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1242 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1248 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1254 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1260 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1262 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Aroclor-1268 [1]	ND	0.20	µg/Wipe	1		SW-846 8082A	8/26/20	8/29/20 18:45	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	100	30-150							
Decachlorobiphenyl [2]	112	30-150							
Tetrachloro-m-xylene [1]	89.3	30-150							
Tetrachloro-m-xylene [2]	98.4	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data**

Prep Method: SW-846 3540C Analytical Method: SW-846 8082A

Lab Number [Field ID]	Batch	Initial [Wipe]	Final [mL]	Date
20H1156-01 [LTM-CR-VWBH-721]	B265180	1.00	10.0	08/26/20
20H1156-02 [LTM-CR-VWBH-722]	B265180	1.00	10.0	08/26/20
20H1156-03 [LTM-CR-VWBH-723]	B265180	1.00	10.0	08/26/20
20H1156-04 [LTM-CR-VWBH-724]	B265180	1.00	10.0	08/26/20
20H1156-05 [LTM-CR-VWC-725]	B265180	1.00	10.0	08/26/20
20H1156-06 [LTM-CR-VWC-726]	B265180	1.00	10.0	08/26/20
20H1156-07 [LTM-MR-VWC-727]	B265180	1.00	10.0	08/26/20
20H1156-08 [LTM-MR-VWC-728]	B265180	1.00	10.0	08/26/20
20H1156-09 [LTM-BR-VWC-729]	B265180	1.00	10.0	08/26/20
20H1156-10 [LTM-MR-VWW-730]	B265180	1.00	10.0	08/26/20
20H1156-11 [LTM-MR-VWW-731]	B265180	1.00	10.0	08/26/20
20H1156-12 [LTM-BR-VWW-732]	B265180	1.00	10.0	08/26/20
20H1156-13 [LTM-BR-VWWD-733]	B265180	1.00	10.0	08/26/20
20H1156-14 [LTM-CR-VWBHD-734]	B265180	1.00	10.0	08/26/20

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QUALITY CONTROL
Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B265180 - SW-846 3540C
Blank (B265180-BLK1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	ND	0.20	µg/Wipe							
Aroclor-1016 [2C]	ND	0.20	µg/Wipe							
Aroclor-1221	ND	0.20	µg/Wipe							
Aroclor-1221 [2C]	ND	0.20	µg/Wipe							
Aroclor-1232	ND	0.20	µg/Wipe							
Aroclor-1232 [2C]	ND	0.20	µg/Wipe							
Aroclor-1242	ND	0.20	µg/Wipe							
Aroclor-1242 [2C]	ND	0.20	µg/Wipe							
Aroclor-1248	ND	0.20	µg/Wipe							
Aroclor-1248 [2C]	ND	0.20	µg/Wipe							
Aroclor-1254	ND	0.20	µg/Wipe							
Aroclor-1254 [2C]	ND	0.20	µg/Wipe							
Aroclor-1260	ND	0.20	µg/Wipe							
Aroclor-1260 [2C]	ND	0.20	µg/Wipe							
Aroclor-1262	ND	0.20	µg/Wipe							
Aroclor-1262 [2C]	ND	0.20	µg/Wipe							
Aroclor-1268	ND	0.20	µg/Wipe							
Aroclor-1268 [2C]	ND	0.20	µg/Wipe							
Surrogate: Decachlorobiphenyl	2.15		µg/Wipe	2.00		108	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.27		µg/Wipe	2.00		114	30-150			
Surrogate: Tetrachloro-m-xylene	1.68		µg/Wipe	2.00		83.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.87		µg/Wipe	2.00		93.5	30-150			

LCS (B265180-BS1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	0.51	0.20	µg/Wipe	0.500		103	40-140			
Aroclor-1016 [2C]	0.55	0.20	µg/Wipe	0.500		110	40-140			
Aroclor-1260	0.49	0.20	µg/Wipe	0.500		97.8	40-140			
Aroclor-1260 [2C]	0.50	0.20	µg/Wipe	0.500		99.5	40-140			
Surrogate: Decachlorobiphenyl	2.10		µg/Wipe	2.00		105	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.21		µg/Wipe	2.00		111	30-150			
Surrogate: Tetrachloro-m-xylene	1.68		µg/Wipe	2.00		84.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.88		µg/Wipe	2.00		93.8	30-150			

LCS Dup (B265180-BSD1)

Prepared: 08/26/20 Analyzed: 08/29/20

Aroclor-1016	0.53	0.20	µg/Wipe	0.500		107	40-140	3.65	30	
Aroclor-1016 [2C]	0.57	0.20	µg/Wipe	0.500		115	40-140	3.59	30	
Aroclor-1260	0.50	0.20	µg/Wipe	0.500		100	40-140	2.55	30	
Aroclor-1260 [2C]	0.51	0.20	µg/Wipe	0.500		102	40-140	2.15	30	
Surrogate: Decachlorobiphenyl	2.19		µg/Wipe	2.00		110	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.33		µg/Wipe	2.00		116	30-150			
Surrogate: Tetrachloro-m-xylene	1.77		µg/Wipe	2.00		88.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.97		µg/Wipe	2.00		98.4	30-150			

**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES****LTM-CR-VWC-725***SW-846 8082A*

Lab Sample ID: 20H1156-05 Date(s) Analyzed: 08/29/2020 08/29/2020
Instrument ID (1): ECD4 Instrument ID (2): ECD4
GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1254	1	0.000	0.000	0.000	0.37	
	2	0.000	0.000	0.000	0.37	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LTM-MR-VWC-727

Lab Sample ID: 20H1156-07 Date(s) Analyzed: 08/29/2020 08/29/2020

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1248	1	0.000	0.000	0.000	0.34	
	2	0.000	0.000	0.000	0.38	11.1
Aroclor-1254	1	0.000	0.000	0.000	0.38	
	2	0.000	0.000	0.000	0.44	14.6

**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES***SW-846 8082A***LTM-BR-VWC-729**

Lab Sample ID: 20H1156-09 Date(s) Analyzed: 08/29/2020 08/29/2020
Instrument ID (1): ECD4 Instrument ID (2): ECD4
GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1248	1	0.000	0.000	0.000	0.27	
	2	0.000	0.000	0.000	0.27	0.0
Aroclor-1254	1	0.000	0.000	0.000	0.50	
	2	0.000	0.000	0.000	0.53	5.8

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B265180-BS1 Date(s) Analyzed: 08/29/2020 08/29/2020

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.51	
	2	0.000	0.000	0.000	0.55	7.6
Aroclor-1260	1	0.000	0.000	0.000	0.49	
	2	0.000	0.000	0.000	0.50	2.0

**IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES***SW-846 8082A***LCS Dup**

Lab Sample ID: B265180-BSD1 Date(s) Analyzed: 08/29/2020 08/29/2020
Instrument ID (1): ECD4 Instrument ID (2): ECD4
GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.53	
	2	0.000	0.000	0.000	0.57	7.3
Aroclor-1260	1	0.000	0.000	0.000	0.50	
	2	0.000	0.000	0.000	0.51	2.0

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
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No certified Analyses included in this Report

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2021
RI	Rhode Island Department of Health	LAO00112	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2021
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	10/1/2020



Phone: 413-525-2332

Fax: 413-525-6405

Email: info@con-testlabs.com

Woodard and Curran

Address: 40 Shattuck Road Andover, MA

Phone: 978 482-7867

Project Name:

UMass Amherst LT Monitoring

Project Location:

Amherst MA

Project Number:

225695.05

Project Manager:

George Franklin

Con-Test Quote Name/Number:

W&C Standard Pricing

Invoice Recipient:

George Franklin

Sampled By:

George Franklin

Doc # 381 Rev 1_03242017

http://www.con-testlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 4 of 4

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: **5 Day TAT**
Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐
Data Delivery
Format: PDF ☒ EXCEL ☐
Other:
CLP Like Data Pkg Required: ☐
Email To: George Franklin
Fax To #:

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code
5	LTM-CR-VWC-725	8/20/2020	10:35		x	O	U
6	LTM-CR-VWC-726	8/20/2020	10:39		x	O	U
7	LTM-MR-VWC-727	8/20/2020	12:02		x	O	U
8	LTM-MR-VWC-728	8/20/2020	12:04		x	O	U
9	LTM-BR-VWC-729	8/20/2020	12:12		x	O	U
10	LTM-MR-VWW-730	8/20/2020	12:02		x	O	U
11	LTM-MR-VWW-731	8/20/2020	12:00		x	O	U
12	LTM-BR-VWW-732	8/20/2020	12:11		x	O	U
13	LTM-BR-VWWD-733	8/20/2020	12:11		x	O	U
14	LTM-CR-VWBHD-734	8/20/2020			x	O	U

Comments: PCBs via USEPA method 8082A with Soxhlet Extraction (3540C)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature) Date/Time: 8/21/20 13:05	Detection Limit Requirements MA <input type="checkbox"/> MA MCP Required	Special Requirements MCP Certification Form Required
Received by: (signature) Date/Time: 8/21/20 13:05	CT <input type="checkbox"/> CT RCP Required	CT RCP Certification Form Required
Relinquished by: (signature) Date/Time: 8/21/20 16:05	Other: <input type="checkbox"/> MA State DW Required	
Received by: (signature) Date/Time: 8/21/20 16:05	PWSID #	
Relinquished by: (signature)	Project Entity	
Received by: (signature)	Government <input type="checkbox"/> Municipality <input type="checkbox"/> MWRA <input type="checkbox"/> WRTA <input type="checkbox"/> Other <input type="checkbox"/>	Chromatogram <input type="checkbox"/> AIHA-LAP, LLC <input type="checkbox"/>
Received by: (signature)	Federal <input type="checkbox"/> City <input type="checkbox"/> 21 J <input type="checkbox"/> School <input type="checkbox"/> MBTA <input type="checkbox"/>	
Received by: (signature)		



I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False
Statement will be brought to the attention of the Client - State True or False**

Client W and C
 Received By GA Date 8/21/20 Time 1605
 How were the samples received? In Cooler T No Cooler On Ice T No Ice
 Direct from Sampling Ambient Melted Ice
 Were samples within Temperature? 2-6°C T By Gun # 4 Actual Temp - 5.2
 By Blank # Actual Temp -
 Was Custody Seal Intact? NA Were Samples Tampered with? NA
 Was COC Relinquished? T Does Chain Agree With Samples? T
 Are there broken/leaking/loose caps on any samples? F
 Is COC in ink/ Legible? T Were samples received within holding time? T
 Did COC include all pertinent Information? Client T Analysis T Sampler Name T
 Project T ID's T Collection Dates/Times T
 Are Sample labels filled out and legible? T
 Are there Lab to Filters? F Who was notified?
 Are there Rushes? F Who was notified?
 Are there Short Holds? F Who was notified?
 Is there enough Volume? T
 Is there Headspace where applicable? F MS/MSD? F
 Proper Media/Containers Used? T Is splitting samples required? F
 Were trip blanks received? F On COC? F
 Do all samples have the proper pH? NA Acid Base

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

Received 2 extra wipe samples