PCB REMEDIATION COMPLETION REPORT

University of Massachusetts

Dubois Library

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1. INTRODUCTION

This polychlorinated biphenyl (PCB) Remediation Completion Report has been prepared by Woodard & Curran on behalf of the University of Massachusetts (UMass) to comply with the requirements set forth in the U.S. Environmental Protection Agency's (EPA) Dubois Library PCB Cleanup and Disposal Approval under 40 CFR 761.61(c), 761.62, and 761.79(h) received by UMass on April 8, 2010 (the Approval) for the subject work. This Approval is provided in Appendix A to this Report.

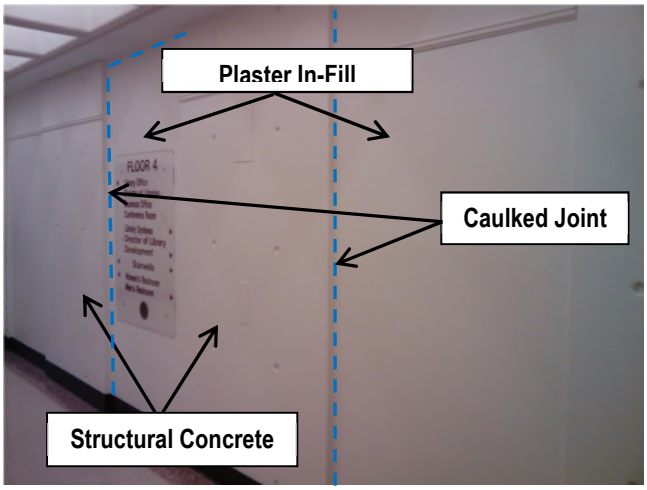
This Report documents PCB remediation activities conducted at the Dubois Library located on the UMass Amherst Campus in Amherst, Massachusetts. PCB remediation activities were conducted in accordance with the Notification[1] and the Approval.

1.1 BACKGROUND / CONCEPTUAL SITE MODEL

The Dubois Library is a 28 story building constructed in the early 1970's on the University of Massachusetts Amherst Campus. The upper two floors, floors 27 and 28, consist primarily of roof access, the elevator machine room, and mechanical and electrical equipment. The remaining floors are currently in use as a library including study areas, classrooms, computer terminals, and common areas. A Location Map is provided as Figure 1-1.

The Dubois Library was originally constructed in the early 1970's, during a time period when PCBs were sometimes used in certain building materials (e.g., caulking). In preparation for the elevator replacement project, a materials survey was conducted to check for the presence of various hazardous materials that may be encountered during the project. This materials survey included an inspection and sampling of suspect materials for PCBs.

Analytical results indicated that certain caulking materials along elevator shaft masonry in-fill to structural concrete joints contained PCBs at concentrations greater than 50 parts per million (ppm). Adjacent building materials were sampled to determine whether PCBs had migrated from the caulking into these adjacent materials, and the characterization data confirmed that detectable concentrations of PCBs were present in certain adjacent materials at regulated concentrations. A photograph of a typical elevator lobby is shown to the right.



Typical Elevator Lobby (Pre-Remediation)

After completing the characterization of PCB-containing materials at the Site, these results were used to develop a remedial approach that was incorporated into the overall renovation project plans as presented in the PCB Remediation Plan submitted on March 2, 2010.

[1] Information was prepared by Woodard & Curran on behalf of UMass to satisfy the requirements under 40 CFR 761.61(c) and 761.79(h). Information was submitted on March 2, 2010 (PCB Remediation Plan) and March 26, 2010 (Response to EPA Comments). These submittals together form the "Notification."

1.2 SUBMITTALS AND PROJECT TIMELINE

The following list provides a summary of the major activities conducted and document submittals prepared as part of the remediation activities. It should be noted that sampling was conducted throughout the program in support of these submittals.

- Initial Site Inspection and Characterization Sample Collection – April through November 2009;
- PCB Remediation Plan submitted – March 2, 2010;
- Response to Comments submitted – March 26, 2010;
- EPA Dubois Library PCB Cleanup and Disposal Approval under 40 CFR 761.61(c), 761.62, and 761.79(h) received by UMass – April 8, 2010;
- Contractor Work Plan submitted – May 14, 2010 (follow up comment response on May 19, 2010);
- First phase of PCB Remediation Activities – May 2010 to August 2010 (removal of plaster in-fill materials and application of Sikagard 550W coating);
- Project Status Update submitted – October 15, 2010;
- Second phase of PCB Remediation Activities - May 2011 to July 2011 (removal of CMU block in-fill materials);
- Project Status Update submitted – November 17, 2011;
- Elevator Replacement Project/PCB Remediation Activities Completed – August 2012 (final liquid coating application and installation of metal cladding);
- Final Inspection of encapsulated surfaces and post-abatement monitoring – August 28, 2012; and
- Initial Post-Remediation Monitoring Results Letter Report submitted – September 13, 2012.

1.3 PROJECT TEAM

The remediation project team consisted of the following parties:

- University of Massachusetts – Owner;
- Timothy Murphy Architects – Project Designer;
- Eastern General Contractors, Inc. – General Contractor;
- American Environmental, Inc. – Remediation Contractor (asbestos and PCB removal);
- King Painting, Inc. – Painters (application of liquid coatings); and
- Woodard & Curran – PCB Remediation Consultant.

2. REMEDY IMPLEMENTATION

This section describes the PCB cleanup and disposal activities conducted under the Approval, consistent with the requirements of 40 CFR 761.61(c), 761.62, and 761.69(h). Remediation activities began during the week of May 17, 2010. The PCB remediation component of the elevator replacement project consisted of the following:

- Removal and off-site disposal of ≥ 50 ppm PCB containing caulking and elevator in-fill plaster materials as ≥ 50 ppm PCB waste;
- Removal and off-site disposal of elevator in-fill Concrete Masonry Unit (CMU) block materials as < 50 ppm PCB wastes or general demolition debris (based on results of verification sampling following plaster removal); and
- Encapsulation of interior building materials that were scheduled to remain in place and contained PCBs at concentrations above the high occupancy clean up criteria of 1 ppm.

The PCB remediation activities were conducted during three major mobilizations driven by the overall project sequencing. During the summer of 2010, the ≥ 50 ppm PCB containing caulking and elevator in-fill plaster materials were removed for off-site disposal. Underlying CMU block in-fill materials were then removed in the summer of 2011 during two mobilizations as each elevator shaft was being renovated for installation of the new elevator. Additional information of the activities including site preparations and controls, PCB impacted material removals, encapsulation of residual PCBs, inspections and verification sample collection, and material disposal is presented in the following sections.

2.1 SITE PREPARATION AND CONTROLS

Prior to initiating the remediation activities, site preparations and controls were implemented as described in the PCB Remediation Plan and the Contractor Work Plan. These preparations included the development of a Health & Safety Plan and the Contractor Work Plan. Prior to initiating remedial activities on each floor, signs were placed in the main lobby indicating which floors were secured (i.e., no access) due to the work and signs were posted on both sides of the respective lobbies where work was being conducted. American Environmental personnel constructed a single polyethylene containment around the work areas of each elevator lobby and established negative pressure controls using HEPA filtration. Portions of the lobbies outside the work areas were kept open to allow access to other areas of the library during work activities. Water misting, HEPA filter equipped tools, and negative pressure controls with HEPA filtration were used to control dust during removal.

2.2 REMOVAL OF ≥ 50 PPM PCB MATERIALS

Removal of ≥ 50 ppm PCB containing caulking and plaster materials was conducted in accordance with Section 3.2 of the PCB Remediation Plan and the Contractor Work Plan.

Following the construction of polyethylene containment and the establishment of site controls as described above, caulking was removed using hand tools and plaster in-fill materials were removed using electric chipping guns with chisel attachments. Once gross removal of caulking and plaster was completed, remaining materials were removed using manual methods (scrapers, wire brushes, etc.) until no visible caulking or plaster materials were observed.

All wastes were double-wrapped in polyethylene sheeting at the point of generation and transported at the conclusion of each shift to the designated hazardous waste storage area via the loading dock. Additional information on waste handling and storage is provided in Section 2.5.

2.2.1 Inspection and Verification Sampling

Following caulking and plaster removal, the exposed masonry was inspected to verify that all caulking and plaster were removed and verification samples of the underlying CMU block were collected. One sample was collected from

a randomly selected location on each in-fill and submitted for PCB analysis. Verification samples were collected consistent with the USEPA Region I *Standard Operating Procedure for Sampling Concrete in the Field*.

Samples were transferred on ice to Con-Test Analytical Laboratory of East Longmeadow, Massachusetts under standard chain of custody procedures. Samples were extracted using USEPA Method 3540C (Soxhlet extraction) and analyzed for PCBs using USEPA Method 8082.

Analytical results from the verification samples indicated that the concentration of PCBs ranged from 0.196 to 29.4 ppm with approximately two-thirds (25 of 37 in-fills) detecting PCBs > 1 ppm. A summary of the verification sampling results is presented on Table 2-1. Complete analytical laboratory reports are provided in Appendix B.

2.2.2 Dust Monitoring

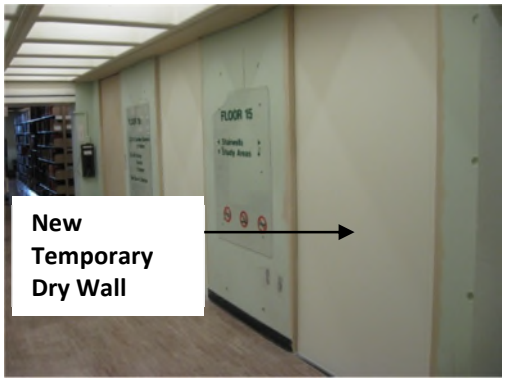
Dust monitoring was conducted during active removal of caulking and in-fill plaster materials by ATC Associates personnel, in accordance with the dust monitoring plan included in Appendix D of the PCB Remediation Plan. A direct reading particulate meter (Thermo Electron Inc. PDR 1000-AN) was used to monitor total dust concentrations outside the work areas at a minimum frequency of once every hour during active removal. Concentrations of dust exceeded the project action limit of 0.1 mg/m^3 on two occasions on May 25, 2010; however, in both instances the reported dust concentrations were not sustained and inspection of the containment and controls did not find any potential breaches in containment.

A copy of the dust monitoring logs is provided in Appendix C.

2.3 APPLICATION OF LIQUID COATINGS

Following removal of the caulking and plaster materials, two coats of the elastomeric acrylic coating (Sikagard 550W) were applied in contrasting colors to the building joint and adjacent building materials (structural concrete surfaces, ceiling concrete surfaces, transom plaster, and in-fill plaster) remaining in place, as indicated in the Plan.

In order to evaluate the effectiveness of the initial protective coating, wipe samples were collected from surfaces coated with the Sikagard 550W product. A total of four wipe samples were collected from each of the main categories of building surfaces. One sample was collected from each of the following surfaces: plaster in-fill remaining in place; structural concrete column; transom plaster; and concrete ceiling. Analytical results indicated that the concentration of PCBs were below the laboratory's minimum reporting limit in all samples collected (<0.5 µg/100cm^2). A summary of the initial verification wipe sample locations and analytical results is presented on Table 2-2. Complete analytical laboratory reports are provided in Appendix B.



In-Fills Following Initial Remediation (Summer 2010)

Following completion of the remedial activities described above, polyethylene sheeting and new, temporary dry wall were installed over the in-fills as an interim protective measure and for aesthetic purposes until the new elevators were installed (see photograph to the right).

In August 2012, following completion of the elevator replacement project (approximately one year after removal of the CMU block in-fill materials as described in Section 2.4 below) an acrylic latex paint was applied to all surfaces within the elevator lobbies per the overall elevator replacement project plans.

2.4 CMU BLOCK REMOVAL

Removal of the CMU block in-fill materials was conducted from elevator shafts 1, 2, and 4 in accordance with the overall elevator replacement project. Removal activities began with the shaft 2 in-fills on May 31, 2011 and completed with the shaft 4 in-fills during the week of July 11, 2011.

In accordance with Section 3.2.3 of the approved Remediation Plan, masonry block from the 25 in-fills represented by verification samples containing PCBs at concentrations > 1 ppm were managed as PCB remediation waste. In addition, materials from shaft 2 in-fills on the ninth and tenth floors were also managed as PCB remediation waste (verification sample results of 0.815 and 0.933 ppm, respectively).

Prior to removal, to prevent dust and debris from entering the elevator shafts, polyethylene sheeting was taped in place on the shaft side of the in-fills followed by plywood, which was fastened over the sheeting into the adjacent concrete structure. Within the elevator lobby areas, polyethylene containment including negative pressure controls was erected around each individual in-fill prior to removal. Another containment structure was erected within a portion of the elevator lobby as a "support work zone" to allow for access to the operable elevators during in-fill removal. In-fill materials were removed from the lobby side using manual methods including hand tools and prybars.

Prior to removal of CMU block in-fill materials, a background total dust level was recorded for each work area. During removal activities, total dust readings were recorded immediately outside the containment area. Results of the dust monitoring indicated that total dust levels did not exceed the project action level during in-fill removal. A copy of the dust logs is provided in Appendix C.

All waste materials generated, including dry wall, CMU block, disposal tools, PPE, and polyethylene sheeting, were placed into lined cubic yard boxes at the point of generation and then transported to the designated waste storage area outside of the building. Additional information on waste handling and storage is provided in Section 2.5.

2.5 WASTE STORAGE, DISPOSAL, AND EQUIPMENT DECONTAMINATION

Waste storage and disposal activities were completed in accordance with the procedures described in the PCB Remediation Plan and the Contractor Work Plan.

All caulking and building materials characterized as ≥ 50 ppm PCB waste were segregated as a single waste stream and handled as ≥ 50 ppm PCB waste. Associated disposable PCB contaminated materials (poly-sheeting, PPE, disposable tools and equipment, decontamination materials, etc.) were managed for disposal with the ≥ 50 ppm PCB waste. The ≥ 50 ppm wastes generated during the project were bagged at the point of generation and transported with lined, wheeled carts at the end of each shift to the on-site storage area via the designated waste transport route. Materials were stored in 55-gallon drums within a locked storage trailer. The drums were properly labeled and marked in accordance with 40 CFR 761.40.

CMU block in-fill materials were segregated as a single waste stream for disposal as < 50 ppm PCB wastes. Associated disposable PCB contaminated materials (poly-sheeting, PPE, disposable tools and equipment, decontamination materials, etc.) were managed for disposal with the < 50 ppm PCB waste. Following use, non-disposable equipment and tools used during removal of PCB wastes were decontaminated using a double wipe with methanol soaked rags following gross removal of any dust or debris for disposal as < 50 ppm wastes. The < 50 ppm waste materials were placed into lined cubic yard boxes, labeled as non-hazardous PCB wastes and transported using pallet jacks at the end of each shift to the on-site storage area via the designated waste transport route.

At the conclusion of the project, waste materials were transported off-site under manifest as follows:

- ≥ 50 ppm PCB waste was transported to Environmental Quality's Wayne Disposal Landfill in Belleville, Michigan. Approximately 0.4 tons of materials were shipped off-site for disposal as ≥ 50 ppm PCB waste.

- < 50 ppm PCB waste was transported to Waste Management's Turnkey disposal facility in Rochester, New Hampshire for disposal as < 50 ppm PCB waste. Approximately 13 tons of materials were shipped off-site for disposal as < 50 ppm PCB waste.

Copies of all PCB waste shipment records including manifests and certificates of disposal are provided in Appendix D.

3. POST REMEDIATION ACTIVITIES

Following completion of remediation activities included in the Notification, initial post-remediation sampling was conducted on August 28, 2012. The post-remediation sampling consisted of the collection of indoor air samples and verification wipe samples as specified under Condition 12b of the Approval. Based on the initial indoor air results, an additional, expanded round of indoor air sampling was conducted on October 13, 2012. A description of the samples collected and the analytical results is provided below.

Results of the post-remediation monitoring have been used to develop a Long Term Maintenance and Monitoring Plan (MMIP) in accordance with Approval Conditions 12c and 14. This MMIP is being submitted under separate cover.

3.1 LOBBY RESTORATION

Following completion of the PCB remediation activities described in the previous sections, the five elevators were replaced in accordance with the overall project schedule. As part of the restoration and final design, structural concrete materials formerly in direct contact with the caulking and the concrete transom materials were covered with stainless steel cladding. As part of the final restoration, a final coating of acrylic latex paint was applied to all exposed concrete surfaces within in the elevator lobbies.

3.2 SURFACE WIPE SAMPLING

In accordance with Condition 12b(ii) and upon completion of the remediation activities, eight verification wipe samples were collected on August 28, 2012 as part of the initial post-remediation sampling. These samples were collected following application of the final coat of acrylic latex paint to concrete surfaces located within the elevator lobbies.

Wipe samples were collected in accordance with the standard wipe test as specified in 40 CFR 761.123 over a 100 cm^2 area. All wipes samples were transported to ConTest Analytical Laboratory, located in East Longmeadow, Massachusetts under standard chain of custody procedures. All wipe samples were extracted via the 3540C (Soxhlet) extraction and analyzed for PCBs using the USEPA Method 8082.

During the wipe sampling process, visual inspection confirmed that all areas were coated as required by the PCB Remediation Plan. Areas formerly in direct contact with the removed PCB caulking were not visible as a result of the new sheet metal cladding installed at the perimeter of each elevator shaft opening.

Analytical results from the wipe samples indicated the following:

- CMU Block In-Fill Materials - Three wipe samples were collected from encapsulated masonry block in-fills on the 4th, 15th, and 24th floors. Wipe samples were collected from distances of 1.5 or 6 inches from the former caulked joints. Analytical results indicated that PCBs were non-detect (< 0.20 ug/100cm^2) in all three samples;
- Transom Plaster – One sample was collected from the encapsulated plaster transom on the 3rd floor (prior to installation of sheet metal cladding). Analytical results indicated that PCBs were present at a concentration of 0.72 ug/100cm^2;
- Ceiling – One sample was collected from the encapsulated ceiling on the 15th floor. Analytical results indicated that PCBs were non-detect (< 0.20 ug/100 cm^2); and
- Structural Concrete Columns – Three wipe samples were collected from encapsulated structural concrete materials. 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 ug/100cm^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 ug/100cm^2 in this sample (sample DL-4E0-VWC-100 collected from the fourth floor).

Results of the initial post-remediation verification wipe sample results were reported to EPA on September 13, 2012 and will be used to develop the MMIP for the Dubois Library. A summary of the wipe sample results is presented on Table 3-1 with the complete laboratory reports provided in Appendix B.

3.3 INDOOR AIR SAMPLING

In accordance with Condition 12b(i), three indoor air samples were collected on August 28, 2012 as part of the initial post-remediation sampling and submitted for PCB analysis (Method TO-10A). At each of the sample locations a low volume PUF cartridge was connected to a personal air pump (SKC AIRCHEK Sampler) with flexible tubing. The cartridge was positioned between 3 and 5 feet above the floor using a telescoping tubing in the approximate center of the selected lobbies. Placards were placed on the sample apparatus providing UMass EH&S contact information for questions regarding the sampling (no inquiries were made during sample collection).

Samples were collected at a rate of 2.6 liter per minute (L/min) for four hours. The flow rates were set by the equipment rental supply company prior to delivery and verified in the field by Woodard & Curran personnel using a BIOS digital flow rate calibrator. Pumps and flow rates were monitored periodically throughout the sample collection period and observations recorded. At the end of the required sample interval, the pumps were shut off and the cartridge placed in aluminum foil, labeled, and placed on ice for delivery to the analytical laboratory (ConTest Laboratory).

Analytical results indicated that PCBs were present at concentrations of 0.690, 0.977, and 1.146 ug/m^3 in the three samples collected within the lobby areas. Analytical results from the ambient air sample collected outside of the library indicated that PCBs were non-detect (< 0.005 ug/m^3). Results of the post-remediation air sampling were reported to EPA on September 13, 2012.

As presented on Table 3-2, these levels indicate that concentrations of PCBs continue to be detected in indoor air samples collected from three lobby areas. EPA's published guidance indoor air levels for schools (September 2009) are 0.450 ug/m^3 for adults and 0.600 ug/m^3 for children 15 to 19 years of age. As indicated above, the concentrations detected in the samples are close to, but above, this range.

These target levels are based on an assumed 8 hour school day over 180 days for adults or college-aged students. However, the samples are from lobby areas, which are transient in nature and not continuously occupied or used for even short durations, such as classrooms; therefore, EPA's guidance levels are not directly applicable to the site-specific conditions. To aid in understanding these indoor air levels in the context of their setting and for relative comparison purposes, action levels were derived using a health risk-based approach, following current USEPA risk assessment guidelines. The calculations and assumptions for these levels were presented in Appendix B of the Remediation Plan and were developed for both student and library staff scenarios. The level for the staff, who have a longer exposure duration relative to students, produced the most conservative action level, which was 1.180 ug/m^3. As indicated above, the reported indoor air concentrations were all below this calculated action level.

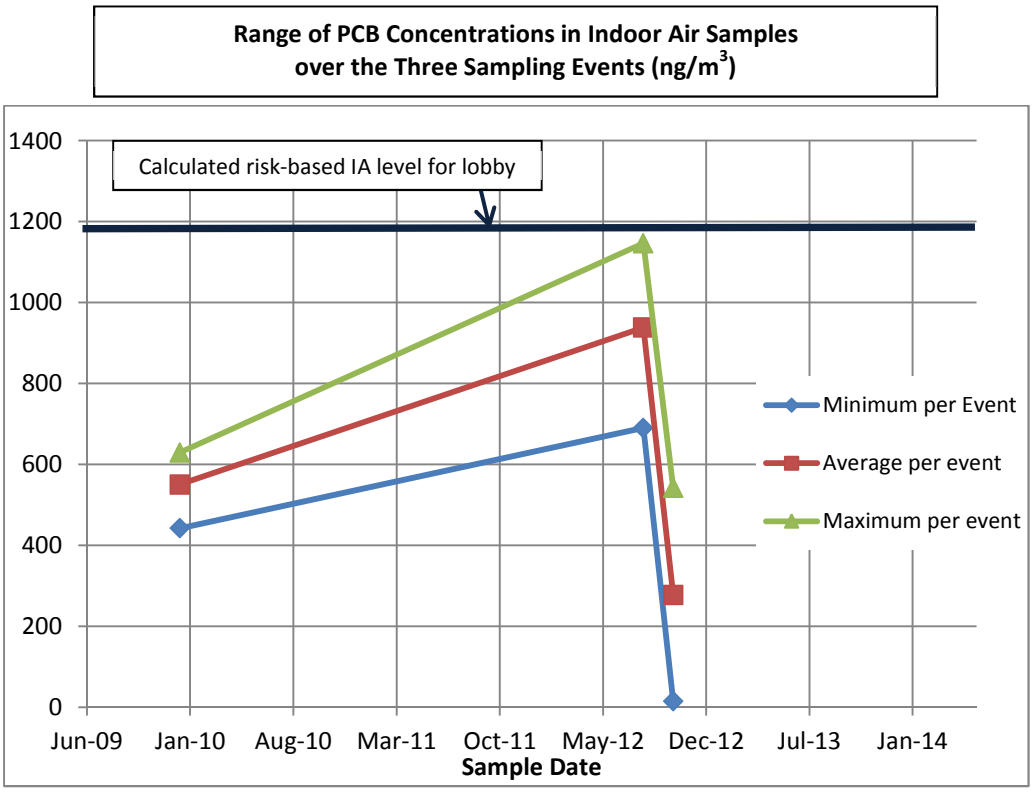
As discussed above, a long term monitoring and maintenance implementation plan is being developed to monitor the long term effectiveness of the encapsulating coatings and barriers. Based on the results of this initial testing, this plan will include both surface wipe and an expanded indoor air sampling program. The expanded indoor air sampling program will be developed to gain an understanding of indoor air levels in the different floors of the library as well as over the different seasons to assess any variations over time.

In support of this expanded indoor air sampling program, on October 16, 2012, indoor air samples were collected from nine lobby areas and submitted for PCB analysis as described above. Analytical results indicated that total PCBs were present at concentrations ranging from 0.014 to 0.542 ug/m^3 in the nine samples collected from interior locations. Analytical results from the ambient air sample collected outside of the library indicated that PCBs were non-detect (< 0.005 ug/m^3). Refer to Table 3-2 for a summary of the indoor air results from all three events. In

addition, Table 3-3 presents a summary of the different homolog groups detected in each of the samples from the three different events. As indicated on this table, the highest contribution of PCBs in each sample was observed in the mid-range groups (tri-tetra-and penta-chlorobiphenyls) during the events. The complete analytical laboratory reports are provided in Appendix B.

The October indoor air results were much lower than both the August 2012 and January 2010 indoor air results. To assess the indoor air data in regard to building ventilation, a review of the building's ventilation system indicated that the building is divided into two separate ventilation zones. One zone provides ventilation to the lower 14 floors and the other zone provides ventilation to upper floors 15 through 26. A review of the indoor air data collected from these two zones (as shown on Table 3-2) indicates no differences between indoor air results and the zones (Zone 1 reported an average concentration of 338 ng/m^3 and Zone 2 reported an average concentration of 228 ug/100cm^2).

However, the amount of ambient/outdoor make-up air introduced to the building is different throughout the heating/cooling season and may affect indoor air levels. Under normal operating conditions, the dampers for both ventilation zones are less open in the winter and summer months to maintain temperatures within the building and more open in the spring and fall months to allow more outdoor air to aid in cooling the building. As shown on the chart below, the higher levels were observed in the winter and summer months (less make-up air) and the lowest level was observed in the Fall with the dampers more open. This information is being used in the development of the MMIP.



4. DATA USABILITY ASSESSMENT

This data quality and data usability assessment has been conducted to review the samples collected in support of the remediation and verification activities. Data validation and review was conducted by Woodard & Curran and a third-party validator, Data Check, Inc. of New Durham, New Hampshire. This review included a check of field documentation including sample collection and preservation methods, a check of the laboratory data and documentation, a review of the internal laboratory QA/QC procedures and results including surrogate recoveries, blank results, matrix spike (MS) and matrix spike duplicate (MSD) results, laboratory control standard (LCS) and laboratory control standard duplicate (LCSD) results, an evaluation of sample holding times, and field duplicate results. Data Check's data validation summaries are provided in Appendix B.

A summary of the data usability assessment for the data is presented below:

- All bulk and wipe samples were extracted by USEPA Method 3540C (Soxhlet Extraction) and analyzed for PCBs by USEPA Method 8082. All air samples were analyzed by EPA Method TO-10A for PCB homologs.
- Consistent procedures and laboratory analysis of the data were achieved. Sample containers were packed on ice and delivered to the laboratory under standard chain of custody procedures. All samples were extracted and analyzed within allowable holding times for the method.
- Some samples were received at the laboratory below the acceptable temperature range (4º Celsius +/- 2 º). However, samples were not frozen and no qualifications were applied.
- The data packages were reviewed to ensure that all sample and associated quality assurance results were available. Results of the completeness review indicated that all collected samples were analyzed and all quality control results were available to complete the data validation process.
- Some samples were analyzed at dilutions due to the elevated concentrations of PCBs present in the samples and/or due to sample matrix. Elevated quantitation limits are reported in these samples as a result of the dilutions.
- Four field duplicate samples were collected during the sampling events to evaluate the precision of the verification sample results. Relative percent difference (RPD) between the primary and associated duplicate samples met the acceptance criteria with the exception of Aroclor 1254 results for one of the masonry block verification sample pairs and five of the homolog group results for one of the indoor air sample pairs. Aroclor 1254 and total PCB results for the primary and duplicate masonry block verification sample pair and the associated homolog groups and total PCB results for the indoor air sample pair were estimated based on this evaluation.
- The RPD between sample column results for individual samples were evaluated to evaluate the precision of the results. The RPD between sample column results were evaluated and determined to be within the acceptance criteria (≤ 25 %) with the exception of nine samples. Aroclor 1254 results from these samples were estimated based on this evaluation.
- No analytes were detected in the method blanks or the field blank samples collected during the sampling events. No qualifications were applied.

  Accuracy of the analytical data was assessed by reviewing the recoveries for MS, MSD, surrogates, LCS, and LCSD. RPD between MS/MSD samples met acceptance criteria with the exception of two samples. Analytical results in one of the two samples (DL-5E2-VMS-022) were not qualified due to sample interferences from other Aroclors. Aroclor 1254 results from sample DL-4E0-WMS-035 were qualified as estimated. LCS/LCSD sample results met acceptance criteria. All surrogate recoveries for the bulk and wipe samples were within the acceptable limits or were diluted out.

For the air samples, surrogate recoveries were identified outside the acceptance limits for five of the samples collected. Detected concentrations of the individual homolog groups were estimated "J" in the five samples. Non-detect homolog group results were estimated "UJ" in two of the five samples based on surrogate recoveries above 10%; however, in three of the samples (DL-OUT-IAS-112 [outdoor background sample], DL-13E-IAS-116, and DL-15E-IAS-117) non-detect results were rejected "R" due to surrogate recoveries below 10%.

As part of the validation, the laboratory was contacted to determine the cause of the low surrogate recoveries. In each instance, the cause was determined to be laboratory error during concentration of the sample extract through which the volume of the extract was reduced to such an extent as to cause loss of the surrogates from the extracts prior to analysis. Air samples with failing surrogate recoveries were not re-analyzed due to the entire sample being consumed in the original extraction.

An evaluation of the overall data set was conducted to determine if the rejected non-detect results could have resulted in a different conclusion surrounding the overall usability of the data. A comparison of the two background samples indicated that the results from both outdoor/background samples were reported as non-detect indicating that PCBs in sample DL-OUT-IAS-112 may accurately represent outdoor concentrations.

For the rejected data from samples collected from interior locations (samples DL-13E-IAS-116 and DL-15E-IAS-117), the specific homolog groups for the rejected data were reported in one of two categories. First, three of the homolog groups (octachlorobiphenyls, nonachlorobiphenyls, and decachlorobiphenyls) were reported as non-detect in all samples collected during each of the three sampling events. Based on the consistent non-detect results reported, the rejected non-detect results for these three homolog groups may adequately reflect the concentrations (non-detect) of the three homolog groups in the samples. Second, the remaining four homolog groups (monochlorobiphenyls, dichlorobiphenyls, hexachlorobiphenyls, and heptachlorobiphenyls) were consistently reported with the lowest contributions to total PCBs in the other samples collected (of the homolog groups with reported concentrations in the individual samples).

Based on these two factors, while the specific homolog group results are rejected, the overall total PCB concentrations reported in the laboratory reports are considered useable for the intended purposes. Total PCB results in each of the five samples with rejected non-detect results for a specific homolog group have been estimated J.

Based on this review, the data adequately represents the materials tested, and the samples are considered usable for the purposes of characterizing PCB-affected media and verifying remediation efforts in accordance with 40 CFR Part 761.

5. DEED NOTICE

Pursuant to Condition 21 of EPA's Approval, a deed notice has been prepared for components of the remediation work. The notice is in the process of being finalized for recording with the Hampshire County Registry of Deeds. Once the process is complete, a copy of the recorded deed notice will be provided to EPA under separate cover.

The subject deed notice covers the areas of encapsulated residual PCBs located at former caulked joints and adjacent building materials (structural concrete surfaces, ceiling concrete surfaces, transom plaster, and in-fill plaster) remaining in place. The restriction includes a description of the extent and levels of PCBs remaining on the building following remediation, a description of the actions taken, a description of the use restrictions, and the long-term monitoring and maintenance requirements.

6. LONG TERM MONITORING AND MAINTENANCE OF ENCAPSULATED SURFACES

Pursuant to Condition 14 of EPA's Approval, a Long Term Monitoring and Maintenance Implementation Plan (MMIP) has been prepared to monitor the effectiveness of the remedy over time. The MMIP, which is being submitted under separate cover, includes the following:

- A description of the monitoring and maintenance activities that will be conducted, including inspection criteria, frequency, and routine maintenance activities;
- Sampling protocols, sampling frequency, analytical criteria, and reporting requirements;
- A communications component which details how the maintenance and monitoring results will be communicated to EPA and personnel responsible for the building;
- A worker training component for maintenance workers or for any person that will be conducting work that could impact the building coatings/barriers; and
- A recordkeeping and reporting schedule to submit the results of the MMIP activities to EPA.

7. SUMMARY AND CONCLUSIONS

The Dubois Library is a 28 story building constructed in the early 1970's on the University of Massachusetts Amherst Campus. The upper two floors, floors 27 and 28, consist primarily of roof access, the elevator machine room, and mechanical and electrical equipment. The remaining floors are currently in use as a library including study areas, classrooms, computer terminals, and common areas.

The Dubois Library was originally constructed in the early 1970's, during a time period when PCBs were sometimes used in certain building materials (e.g., caulking). In preparation for an elevator replacement project, a materials survey was conducted to check for the presence of various hazardous materials, including PCBs, that may be encountered during the project. Analytical results indicated that certain caulking materials along elevator shaft masonry in-fill to structural concrete joints contained PCBs at concentrations greater than 50 ppm. Adjacent building materials were sampled to determine whether PCBs had migrated from the caulking into these adjacent materials, and the characterization data confirmed that detectable concentrations of PCBs were present in certain adjacent materials at regulated concentrations.

The PCB remediation activities described in this Report have been performed in accordance with the Notification and the conditions of EPA's April 8, 2010 Approval. The PCB remediation component of the elevator replacement project consisted of the following:

- Removal and off-site disposal of ≥ 50 ppm PCB containing caulking and elevator in-fill plaster materials as ≥ 50 ppm PCB waste:
    - Approximately 0.4 tons of bulk PCB waste (caulking, backer materials, and plaster in-fill materials) were removed for off-site disposal as ≥ 50 ppm PCB wastes and ACM at Environmental Quality's Wayne Disposal Landfill in Belleville, Michigan.
- Removal and off-site disposal of elevator in-fill CMU block materials as < 50 ppm PCB wastes or general demolition debris (based on results of verification sampling following plaster removal):
    - Approximately 13 tons of bulk < 50 ppm PCB waste (CMU block in-fill materials) were removed for off-site disposal at Waste Management's Turnkey Disposal facility in Rochester, New Hampshire.
- Encapsulation of all plaster surfaces (unused shaft and transom locations) scheduled to remain in place and concrete surfaces along the return to the right angle of the concrete (i.e., to the first 90-degree corner or approximately 2 inches for structural concrete and 12 inches for ceiling concrete) with two coats of an elastomeric acrylic coating (Sikagard 550W); this coating was subsequently covered by either the final interior wall coating for the lobby and/or the metal frame associated with the new elevator doors (estimated area = 2,000 square feet);
- A deed notice will be recorded identifying these areas and a long term monitoring and maintenance program is being implemented to assess and verify the coating's / barrier's effectiveness over time.
- Final application of an acrylic latex paint to all surfaces scheduled to remain in place throughout the lobby area.
- Baseline sampling (surface wipes and indoor air).

The PCB remediation activities were conducted during three major mobilizations driven by the overall project sequencing. During the summer of 2010, the ≥ 50 ppm PCB containing caulking and elevator in-fill plaster materials were removed for off-site disposal. Underlying CMU block in-fill materials were then removed in the summer of 2011 during two mobilizations as each elevator shaft was being renovated for installation of the new elevator.

With the exception of the monitoring and maintenance activities described in the MMIP, no further work is warranted to meet the conditions of the Approval.

Table 2-1
Summary of Masonry Block Verification Sampling Results

UMass Dubois Library
Amherst, MA

Sample ID	Date	Floor	Shaft	Total PCBs (mg/kg)
DL-24E4-VMS-001	5/20/10	24	4	**0.281**
DL-22E4-VMS-002	5/21/10	22	4	**0.196 J**
DL-21E4-VMS003	5/26/10	21	4	**1.63**
DL-19E4-VMS-004	5/27/10	19	4	**29.4**
DL-18E4-VMS-005	5/28/10	18	4	**4.04**
DL-15E1-VMS-006	6/2/10	15	1	**0.627**
DL-15E2-VMS-007	6/2/10	15	2	**3.77**
DL-13E1-VMS-008	6/3/10	13	1	**1.39 J**
DL-13E2-VMS-009	6/3/10	13	2	**0.348**
DL-12E0-VMS-013	6/8/10	12	0	**0.258 J**
DL-12E1-VMS-011	6/4/10	12	1	**3.27**
DL-12E2-VMS-010	6/4/10	12	2	**1.32**
DL-11E0-VMS-012	6/4/10	11	0	**0.234**
DL-10E0-VMS-014	6/8/10	10	0	**3.98**
DL-10E1-VMS-015	6/8/10	10	1	**1.266**
DL-10E2-VMS-016	6/8/10	10	2	**0.933**
DL-9E0-VMS-023	6/9/10	9	0	**0.217**
DL-9E1-VMS-024	6/9/10	9	1	**6.03**
DL-9E2-VMS-025	6/9/10	9	2	**0.815**
DL-7E0-VMS-027	6/10/10	7	0	**7.94**
DL-7E1-VMS-026	6/10/10	7	1	**9.88**
DL-7E2-VMS-028	6/10/10	7	2	**3.34**
DL-6E0-VMS-017	6/8/10	6	0	**14.04 J**
DL-6E1-VMS-018	6/8/10	6	1	**15.86 J**
DL-6E2-VMS-019	6/8/10	6	2	**13.71 J**
DL-5E0-VMS-020	6/9/10	5	0	**1.34**
DL-5E1-VMS-021	6/9/10	5	1	**2.41**
DL-5E2-VMS-022	6/9/10	5	2	**3.14**
DL-4E0-VMS-035	6/9/10	4	0	**0.605**
DL-4E1-VMS-036	6/9/10	4	1	**7.49**
DL-4E2-VMS-037	6/9/10	4	2	**1.77**
DL-3E0-VMS-030	6/10/10	3	0	**7.49 J**
DL-3E1-VMS-029	6/10/10	3	1	**7.66 J**
DL-3E2-VMS-031	6/10/10	3	2	**7.57 J**
DL-2E0-VMS-032	6/10/10	2	0	**0.247**
DL-2E1-VMS-033	6/10/10	2	1	**0.31 J**
DL-2E2-VMS-034	6/10/10	2	2	**3.45**

Notes:
All samples extracted by Method 3540C and analyzed via USEPA method 8082.
Analytical results shaded grey indicate total PCBs > 1 ppm.
J = Analytical results estimated based on data validation. Additional information provided in Appendix B.

Table 2-2
Summary of Initial Verification Wipe Sampling Results

UMass Dubois Library
Amherst, MA

Surface Material	Lobby and Elevator Shaft	Distance from Caulked Joint (inches)	Verification Wipe Sample ID	Sample Date	Total PCBs (µg/100cm2)
In-Fill	24E6	1	DL-VWP-001	8/17/2010	<0.5
Structural Concrete	6E1	1	DL-VWP-003	8/17/2010	<0.5
Transom Plaster	3E4	6	DL-VWP-004	8/17/2010	<0.5
Ceiling	15E2	6	DL-VWP-002	8/17/2010	<0.5

Notes:
All samples extracted by method 3540C and analyzed for PCBs by USEPA Method 8082.
Wipe samples collected in accordance with the standard wipe test method of 40 CFR 761.123.

Table 3-1
Summary of Post-Remediation Verification Wipe Sampling Results

UMass Dubois Library
Amherst, MA

Surface Material	Sampling Event	Encapsulant Applied	Lobby and Elevator Shaft	Distance from Caulked Joint (inches) [1]	Verification Wipe Sample ID	Sample Date	Total PCBs (µg/100cm^2)
In-Fill	Pre-Remediation	Existing Painted Masonry (original painted surfaces)	4E0	10	DL-4E6-PWS(8-12)-087	1/15/2010	< 0.50
			15E0	8	DL-15E6-PWS(6-10)-084	1/15/2010	< 0.50
			18E4	9	DL-18E4-PWS(7-11)-081	1/15/2010	0.5
	Initial Encapsulation	Two Coats of Sikagard 550W	24E0	1	DL-VWP-001	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	4E0	6	DL-19E0-VWC-103	8/28/2012	< 0.20
			15E0	6	DL-22E0-VWC-104	8/28/2012	< 0.20
			24E0	1.5	DL-24E0-VWC-105	8/28/2012	< 0.20
Transom Plaster	Initial Encapsulation	Two Coats of Sikagard 550W	3E4	6	DL-VWP-004	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	3E3	6	DL-3E3-VWC-106	8/28/2012	0.72
Ceiling	Initial Encapsulation	Two Coats of Sikagard 550W	15E2	6	DL-VWP-002	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	15E2	6	DL-15E2-VWC-107	8/28/2012	< 0.20
Structural Concrete (parallel face)	Pre-Remediation	Existing Painted Masonry (original painted surfaces)	4E1	9	DL-4E1-CWS(7-11)-086	1/15/2010	< 0.50
			15E2	9	DL-15E2-CWS(7-11)-083	1/15/2010	< 0.50
			18E4	10	DL-18E4-CWS(8-12)-080	1/15/2010	< 0.50
	Initial Post-Remediation	Interior Paint Final Coat	4E1	10	DL-4E1-VWC-101	8/28/2012	< 0.20
			15E2	10	DL-15E2-VWC-102	8/28/2012	< 0.20
Structural Concrete (elevator recess)	Initial Encapsulation	Two Coats of Sikagard 550W	6E1	1	DL-VWP-003	8/17/2010	< 0.50
	Initial Post-Remediation	Two Coats of Sikagard 550W followed by Interior Paint Final Coat	4E0	2	DL-4E0-VWC-100	8/28/2012	4.6

Notes:
(1) Centerpoint of area included in the wipe sample as measured from original caulked joint except for ceiling wipe sample which is measured from the lobby wall. Wipe samples collected in accordance with the standard wipe test procedures of 40 CFR 761.123 and analyzed for PCBs (USEPA Method 3540C/8082).
µg/100cm^2 = micrograms per 100 square centimeters

Table 3-2
Summary of Post-Remediation Indoor Air Sampling Results

UMass Dubois Library
Amherst, MA

Floor	Air Sample	PCB Concentration (µg/cartridge)	Flow Rate (L/Minute)	Duration (minutes)	PCB Concentration (µg/m^3)
Project Specific Risk-Based Action Level: 1.18 µg/m^3					
Pre PCB Remediation Indoor Air Samples January 15, 2010					
4	DL-4E-IAS-088	0.198	2.58	121	0.629
15	DL-15E-IAS-085	0.146	2.6	127	0.442
18	DL-18E-IAS-082	0.193	2.57	128	0.580
Background	N/A	N/A	N/A	N/A	N/A
Post PCB Remediation Indoor Air Samples August 28, 2012					
4	DL-4E-IAS-108	0.41	2.6	240	0.690
15	DL-15E-IAS-109	0.68	2.6	240	1.146
18	DL-18E-IAS-110	0.58	2.6	240	0.977
Background	DL-OUT-IAS-112	< 0.005	2.6	250	< 0.005 R[1]
Post PCB Remediation Indoor Air Samples October 16, 2012					
Zone 1 Ventilation					
4	DL-4E-IAS-113	0.34	2.6406	241	0.542
5	DL-5E-IAS-114	0.21	2.6517	242	0.332
8	DL-8E-IAS-115	0.25	2.6589	242	0.394
13	DL-13E-IAS-116	0.052	2.6451	244	0.082 J[1]
Zone 2 Ventilation					
15	DL-15E-IAS-117	0.053	2.637	244	0.084 J[1]
18	DL-18E-IAS-118	0.31	2.6225	246	0.488
19	DL-19E-IAS-119	0.1	2.6826	246	0.154 J/UJ
23	DL-23E-IAS-120	0.26	2.6605	248	0.4
26	DL-26E-IAS-121	0.0091	2.6456	250	0.014 J/UJ
Background	DL-OUT-IAS-122	< 0.005	2.6591	240	< 0.005

Notes:
Project Specific Risk-based Action Level as specified in the *Risk-Based Disposal and Cleanup PCB Remediation Plan* for the Dubois Library dated March 2010.
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.
J/UJ = Analytical results qualified as estimated based on external data validation of individual homolog groups.
1. Total PCB results calculated from individual homolog groups including non-detect results. All individual homolog group non-detect results have been rejected due to low surrogate recoveries.

Table 3-3
Indoor Air Sample Representativeness Evaluation
PCB Homolog Groups

UMass Dubois Library
Amherst, MA

Sample ID	Sample Date	Homolog Concentration in µg/m^3									
		Monochlorobiphenyls	Dichlorobiphenyls	Trichlorobiphenyls	Tetrachlorobiphenyls	Pentachlorobiphenyls	Hexachlorobiphenyls	Heptachlorobiphenyls	Octachlorobiphenyls	Nonachlorobiphenyls	Decachlorobiphenyls
Fourth Floor											
DL-4E-IAS-088	1/15/2010	0.047	0.048	0.091	0.175	0.207	0.066	< 0.010	< 0.010	< 0.010	<0.010
DL-4E-IAS-108	8/28/2012	0.042	0.041	0.11	0.2	0.19	0.065	0.013	< 0.0048	< 0.008	< 0.008
DL-4E-IAS-113	10/16/2012	0.013	0.027	0.07	0.16	0.18	0.064	0.015	< 0.0047	< 0.0079	< 0.0079
Fifth Floor											
DL-5E-IAS-114	10/16/2012	0.013	0.024	0.053	0.097	0.091	0.043	0.0098	< 0.0047	< 0.0078	< 0.0078
Eighth Floor											
DL-8E-IAS-115	10/16/2012	0.018	0.034	0.067	0.12	0.11	0.036	0.0097	< 0.0047	< 0.0078	< 0.0078
Thirteenth Floor											
DL-13E-IAS-116	10/16/2012	< 0.0015 R	< 0.0015 R	0.011 J	0.035 J	0.029 J	0.0055 J	< 0.0046 R	< 0.0046 R	< 0.0077 R	< 0.0077 R
Fifteenth Floor											
DL-15E-IAS-085	1/15/2010	< 0.010	0.035	0.081	0.129	0.150	0.047	< 0.010	< 0.010	< 0.010	< 0.010
DL-15E-IAS-109	8/28/2012	0.094	0.081	0.2	0.32	0.3	0.077	0.016	< 0.0048	< 0.008	< 0.008
DL-15E-IAS-117	10/16/2012	0.0055 J	0.015 J	0.028 J	0.024 J	0.0059 J	< 0.0031 R	< 0.0047 R	< 0.0047 R	< 0.0078 R	< 0.0078 R
Eighteenth Floor											
DL-18E-IAS-082	1/15/2010	0.034	0.042	0.129	0.155	0.170	0.057	< 0.010	< 0.010	< 0.010	< 0.010
DL-18E-IAS-110	8/28/2012	0.093	0.074	0.18	0.27	0.24	0.061	0.011	< 0.0048	< 0.008	< 0.008
DL-18E-IAS-118	10/16/2012	0.035	0.042	0.089	0.14	0.12	0.042	0.0059	< 0.0047	< 0.0078	< 0.0078
Nineteenth Floor											
DL-19E-IAS-119	10/16/2012	< 0.0015 R	0.004 J	0.024 J	0.049 J	0.064 J	0.013 J	< 0.0045 R	< 0.0045 R	< 0.0076 R	< 0.0076 R
Twenty-third Floor											
DL-23E-IAS-120	10/16/2012	0.022	0.029	0.067	0.12	0.12	0.034	< 0.0045	< 0.0045	< 0.0076	< 0.0076
Twenty-sixth Floor											
DL-26E-IAS-121	10/16/2012	0.0017 J	0.0023 J	< 0.0015 R	0.0051 J	0.0047 J	< 0.003 R	< 0.0045 R	< 0.0045 R	< 0.0076 R	< 0.0076 R

Notes:
Data presented for direct comparison of analytical laboratory results for representativeness evaluation. Results have not been corrected for temperature and pressure.
Samples collected during the January 2010 sampling event collected over a two hour period.
Samples collected during the August 2012 and October 2012 sampling events collected over a four hour period.
J = Analtyical results estimated based on surrogate recoveries outside acceptable limits.
R = Analytical results rejected based on surrogate recoveries < 10%.

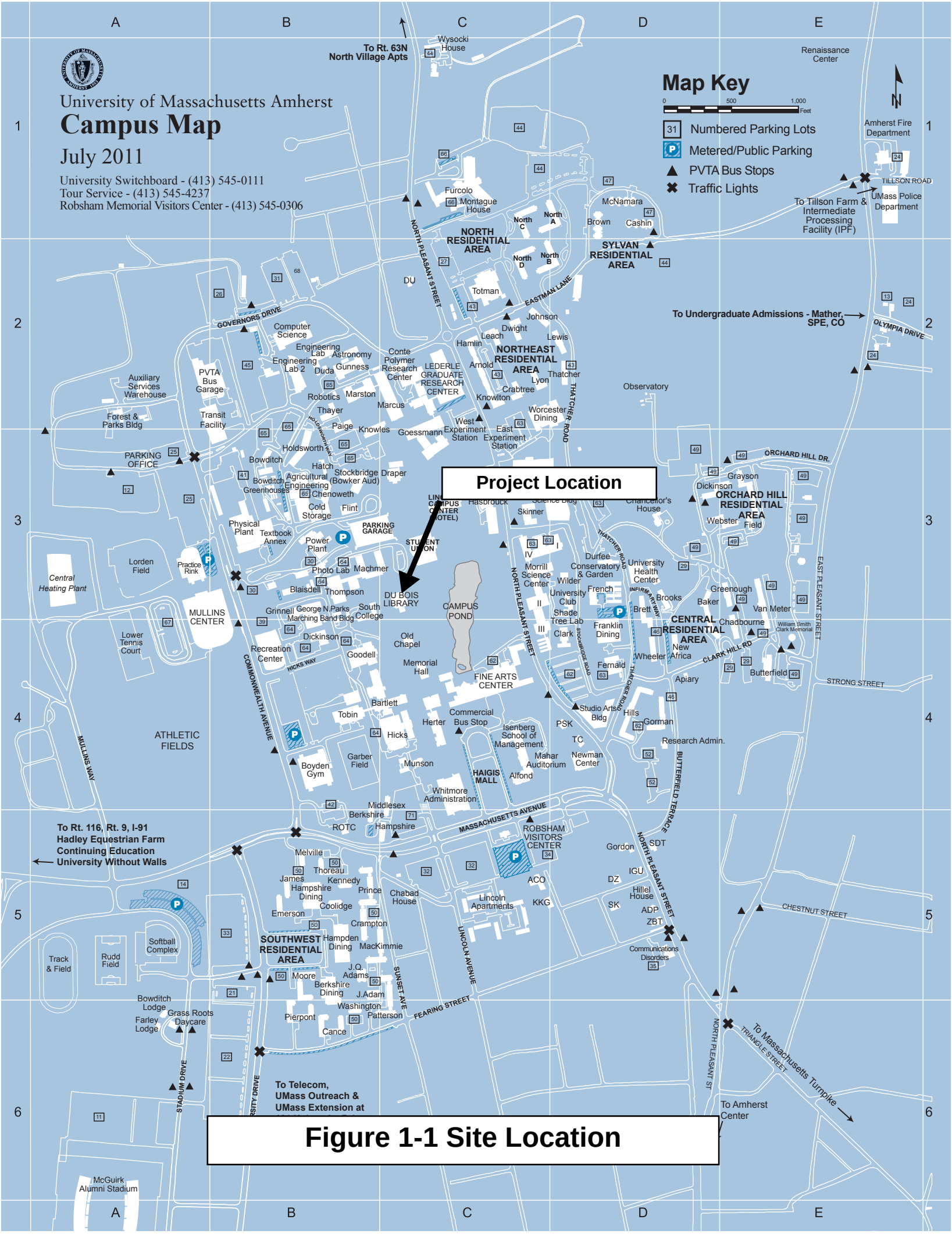


Figure 1-1 Site Location

APPENDIX A: EPA APPROVAL

T. Beckta

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

RECEIVED
APR 12 2010
UMASS AMHERST
ENV. HEALTH & SAFETY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

APR 8 2010

Donald A. Robinson, Ph.D.
Director of Environmental Health & Safety
Draper Hall Room 117
University of Massachusetts
40 Campus Center Way
Amherst, Massachusetts 01003-9244

Re: Dubois Library PCB Cleanup and Disposal Approval under 40 CFR § 761.61(c); § 761.62; and § 761.79(h)

Dear Mr. Robinson:

This is in response to the University of Massachusetts Amherst (UMASS) Notification[1] for approval of a proposed PCB cleanup project for the Dubois Library located on the UMASS campus (the Site). The Site contains PCB caulk in the elevator lobbies on floors two (2) through twenty six (26) that exceeds the allowable PCB levels under the federal PCB regulations at 40 CFR § 761.20(a) and § 761.62.

In its Notification, UMASS has proposed the following PCB cleanup and disposal plan:

- Removal and disposal of approximately 1,600 linear feet of PCB caulk and backer rods (if present);
- Removal of 27 plaster overlays on "in-fills" scheduled for removal;
- Encapsulation of all plaster surfaces (unused elevator shaft and transom locations) that will remain in-place and concrete surfaces located adjacent to the caulk joint (approximately 2-inches for structural concrete and 12-inches for ceiling concrete) with an elastomeric acrylic coating; and, a final coat of paint and/or a metal frame associated with the elevator doors;
- Painting of all surfaces located throughout each elevator lobby;

[1] Information was prepared to satisfy the requirements under 40 CFR §§ 761.61(c) and 761.79(h). Information was submitted dated March 2, 2010 and March 26, 2010 (via e-mail) and shall be referred to as the "Notification."

- Implementation of long term maintenance and monitoring of the encapsulants and the indoor air;

- Recording of a deed notice to document the PCB concentrations at the Site and the long-term maintenance and monitoring requirements; and,

- Disposal of *PCB bulk product waste* in accordance with § 761.62 and *PCB remediation waste* in accordance with § 761.61.

Based on the EPA's review, the information provided meets the notification requirements under § 761.61(c) and the disposal requirements for PCB caulk under § 761.62. EPA also finds that the proposed encapsulation of PCB-contaminated *porous surfaces* should effectively prevent direct exposure of these PCB-contaminated *porous surfaces* to building users provided the encapsulants are maintained. As such, EPA may approve this cleanup and disposal plan under § 761.61(c).

UMASS may proceed with its cleanup in accordance with 40 CFR § 761.61(c); § 761.62; § 761.79(h); its Notification; and this Approval, subject to the conditions of Attachment 1. Following completion of the activities authorized under this Approval, the PCB surface wipe samples and PCB indoor air samples should indicate that there is no unreasonable risk to building users. However, under this Approval, EPA is reserving its rights to require additional mitigation measures should indoor air concentrations or surface wipe sample results indicate that PCBs are present at concentrations which could result in a risk.

EPA shall not consider this project complete until it has received all submittals required under this Approval. Please be aware that upon EPA receipt and review of the submittals, EPA may request any additional information necessary to establish that the work has been completed in accordance with 40 CFR Part 761, the Notification, and this Approval.

Sincerely,

James T. Owens, III Director
Office of Site Remediation & Restoration

cc: Mass DEP, Western Region
J. Hamel, Woodard & Curran
File

Attachment 1

ATTACHMENT 1

PCB CLEANUP AND DISPOSAL APPROVAL CONDITIONS
DUBOIS LIBRARY ELEVATOR LOBBIES ("the Site")
THE UNIVERSITY OF MASSACHUSETTS, AMHERST

GENERAL CONDITIONS

1. This Approval is granted under the authority of Section 6(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e), and the PCB regulations at 40 CFR Part 761, and applies solely to the *PCB bulk product waste* and the *PCB remediation waste* located at the Site and identified in the Notification.

2. The University of Massachusetts-Amherst (UMASS) shall conduct on-site activities in accordance with the conditions of this Approval and with the Notification.

3. In the event that the cleanup plan described in the Notification differs from the conditions specified in this Approval, the conditions of this Approval shall govern.

4. The terms and abbreviations used herein shall have the meanings as defined in 40 CFR § 761.3 unless otherwise defined within this Approval.

5. UMASS must comply with all applicable federal, state and local regulations in the storage, handling, and disposal of all PCB wastes, including PCBs, PCB Items and decontamination wastes generated under this Approval. In the event of a new spill during response actions, UMASS shall contact EPA within 24 hours for direction on PCB cleanup and sampling requirements.

6. UMASS is responsible for the actions of all officers, employees, agents, contractors, subcontractors, and others who are involved in activities conducted under this Approval. If at any time UMASS has or receives information indicating that UMASS or any other person has failed, or may have failed, to comply with any provision of this Approval, it must report the information to EPA in writing within 24 hours of having or receiving the information.

7. This Approval does not constitute a determination by EPA that the transporters or disposal facilities selected by UMASS are authorized to conduct the activities set forth in the Notification. UMASS is responsible for ensuring that its selected transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state and local statutes and regulations.

8. This Approval does not: 1) waive or compromise EPA's enforcement and regulatory authority; 2) release UMASS from compliance with any applicable requirements of federal, state or local law; or 3) release UMASS from liability for, or otherwise resolve, any violations of federal, state or local law.

NOTIFICATION AND CERTIFICATION CONDITIONS

9. This Approval may be revoked if the EPA does not receive written notification from UMASS of its acceptance of the conditions of this Approval within 10 business days of receipt.

10. Prior to initiating onsite work under this Approval, UMASS shall submit the following information for EPA review and/or approval:

    a. a certification signed by its selected contractor, stating that the contractor(s) has read and understands the Notification, and agrees to abide by the conditions specified in this Approval;

    b. A contractor work plan, prepared and submitted by the selected contractor(s), detailing the procedures that will be employed for removal of PCB-contaminated materials and for containment and air monitoring during removal activities. This work plan should also include information on waste storage, handling, and disposal for each waste stream type and for equipment decontamination; and,

    c. a certification signed by the selected analytical laboratory, stating that the laboratory has read and understands the extraction and analytical methods and quality assurance requirements specified in the Notification and in this Approval.

REMEDIAL AND DISPOSAL CONDITIONS

11. To the maximum extent practical, engineering controls, such as barriers, and removal techniques, such as the use of HEPA ventilated tools, shall be utilized during removal processes. In addition, to the maximum extent possible, disposable equipment and materials, including PPE, will be used to reduce the amount of decontamination necessary.

12. PCB-contaminated materials shall be removed and/or decontaminated, and confirmatory sampling and analysis shall be conducted as described below:

    a. PCB caulk and backer rods (if present) and PCB-contaminated building materials shall be removed and disposed of as described in the Notification.

b. Following encapsulation of PCB-contaminated surfaces, initial indoor air sampling and indoor surface sampling for PCBs shall be conducted to determine the impact of the cleanup and disposal activities.

i) A minimum of three (3) indoor air samples, a field duplicate air sample, and a background air sample shall be collected. Indoor air sampling shall be conducted in accordance with EPA Method TO-10A or EPA Method TO-4A. Sufficient sample volumes shall be collected to provide a laboratory reporting limit of less than (<) 0.10 $\mu g/m^3$. PCB analysis shall be conducted for PCB homologues and/or PCB congeners by EPA Method 680 or EPA Method 1668.

ii) A minimum of eight (8) surface wipe samples shall be collected over a minimum of four (4) floors. Wipe sampling of indoor surfaces shall be performed on a surface area basis by the standard wipe test as specified in 40 CFR § 761.123 (i.e. $\mu g/100\ cm^2$). Chemical extraction for PCBs shall be conducted using Methods 3500B/3540C of SW-846 and chemical analysis for PCBs shall be conducted using Method 8082 of SW-846, unless another method(s) is validated according to Subpart Q.

iii) Analytical results of the initial surface wipe sampling and air sampling shall be submitted to EPA within 5 business days of UMASS's receipt of the results.

(1) In the event that PCB concentrations in the wipe samples are greater than (>) 1 $\mu g/100\ cm^2$ or air sample results are > 0.10 $\mu g/m^3$, UMASS shall contact EPA for further discussion and direction on alternatives.

c. UMASS shall submit a monitoring and maintenance implementation plan (MMIP) to monitor the long-term effectiveness of the encapsulants and other barriers (e.g. metal elevator doors) in reducing exposure to building users (see Condition 14).

13. All PCB waste (regardless of concentration) generated as a result of the activities described in the Notification, excluding any decontaminated materials, shall be marked in accordance with § 761.40; stored in a manner prescribed in § 761.65; and, disposed of in accordance with 40 CFR § 761.61(a)(5) or § 761.62, unless otherwise specified below:

a. Non-liquid cleaning materials, PPE and similar materials resulting from decontamination may be disposed of in accordance with 40 CFR § 761.79(g)(6).

b. Moveable equipment, tools, and sampling equipment shall be decontaminated in accordance with either 40 CFR § 761.79(b)(3)(i)(A), § 761.79(b)(3)(ii)(A), or § 761.79(c)(2).

c. PCB-contaminated water generated during decontamination or dewatering shall be decontaminated in accordance with 40 CFR § 761.79(b)(1) or disposed of under § 761.60.

INSPECTION, MODIFICATION AND REVOCATION CONDITIONS

14. Within sixty (60) days of completion of the activities authorized under this Approval, UMASS shall submit for EPA's review and approval, a detailed long-term monitoring and maintenance implementation plan (MMIP) for the encapsulants and for indoor air quality and surface monitoring.

    a. The MMIP shall include: a description of the activities that will be conducted, including inspection criteria and frequency; and, indoor air quality monitoring and surface sampling locations; sampling protocols, sampling frequency, and analytical criteria; and reporting requirements.

    b. The MMIP shall include a communications component which details how the maintenance and monitoring results will be communicated to the building users.

    c. UMASS shall submit the results of these long-term monitoring and maintenance activities to EPA. Based on its review of the results, EPA may determine that modification to the MMIP is necessary in order to insure long-term effectiveness of the physical barriers.

    d. UMASS shall incorporate any changes to the MMIP required by EPA. Activities required under the MMIP shall be conducted until such time that EPA determines, in writing, that such activities are no longer necessary.

15. UMASS shall allow any authorized representative of the Administrator of the EPA to inspect the Site and to inspect records and take samples as may be necessary to determine compliance with the PCB regulations and this Approval. Any refusal by UMASS to allow such an inspection (as authorized by Section 11 of TSCA) shall be grounds for revocation of this Approval.

16. Any modification(s) in the plan, specifications, or information submitted by UMASS, contained in the Notification, and forming the basis upon which this Approval has been issued, must receive prior written approval from the EPA. UMASS shall inform the EPA of any modification, in writing, at least ten (10) days prior to such change. No action may be taken to implement any such modification unless the EPA has approved of the modification, in writing. The EPA may request additional information in order to determine whether to approve the modification.

If such modification involves a change which results in exposures not considered in the Notification, the EPA may revoke, suspend, and/or modify this Approval upon finding that this risk-based cleanup and disposal action may pose an unreasonable risk of injury to health or the environment due to said change. EPA may take similar action if the EPA does not receive requested information needed from UMASS to make a determination regarding potential risk.

17. Any departure from the conditions of this Approval without prior, written authorization from the EPA may result in the revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

18. Any misrepresentation or omission of any material fact in the Notification or in any future records or reports may result in the EPA's revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

19. Approval for these activities may be revoked, modified or otherwise altered: if EPA finds a violation of the conditions of this Approval or of 40 CFR Part 761, including EPA's PCB Spill Cleanup Policy, or other applicable rules and regulations; if EPA finds that these activities present an unreasonable risk to public health or the environment; or if EPA finds that changes are necessary to comply with new rules, standards, or guidance for such approvals. UMASS may apply for appropriate modifications in the event new rules, standards, or guidance come into effect.

RECORDKEEPING AND REPORTING CONDITIONS

20. UMASS shall prepare and maintain all records and documents required by 40 CFR Part 761, including but not limited to the records required under Subparts J and K. A written record of the cleanup and disposal activities and the analytical sampling shall be established and maintained by UMASS in one centralized location, until such time as EPA approves in writing a request for an alternative disposition of such records. All records shall be made available for inspection to authorized representatives of EPA.

21. UMASS shall submit a Final Completion Report (Report) to the EPA within 120 days of completion of the activities described under this Approval. At a minimum, this Report shall include: a discussion of the project activities; characterization and confirmation sampling analytical results; copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; an estimate of the quantity of PCBs removed and disposed off-site; copies of manifests and/or bills of lading; and, copies of certificates of disposal or similar certifications issued by the disposer, if applicable. The Report shall also include a copy of the recorded deed restriction and a certification signed by a UMASS official verifying that the authorized activities have been implemented in accordance with this Approval and the Notification.

22. As required under Condition 14 of this Approval, UMASS shall submit the results of the long-term monitoring and maintenance activities to EPA as specified in the final MMIP to be approved by EPA.

23. Required submittals shall be mailed to:

    Kimberly N. Tisa, PCB Coordinator (OSRR07-2)
    United States Environmental Protection Agency
    5 Post Office Square, Suite 100
    Boston, Massachusetts 02109-3912
    Telephone: (617) 918-1527
    Facsimile: (617) 918-0527

24. No record, report or communication required under this Approval shall qualify as a self-audit or voluntary disclosure under EPA audit, self-disclosure or penalty policies.

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END OF ATTACHMENT 1