Fairfield Public Schools
Fairfield, CT 06825

TO: Dr. David Title and Members of the Board of Education

FROM: Salvatore Morabito

DATE: September 18, 2013

RE: Woodard and Curran Follow-up Assessment Report

This letter is to notify you that the Fairfield Public School District has received the Woodard and Curran Follow-up Assessment of PCBs in building materials in our schools. This follow-up assessment was conducted to determine interim precautionary measures needed at the locations of possible suspect materials. The follow-up assessment was recommended in the previous Woodard and Curran assessment of building materials report.

This follow-up assessment report will be posted on the Fairfield Public Schools' website. The Central Office Administration and all school Principals and Headmasters will keep a copy on file per State regulations.

If you have any questions or concerns regarding the chlorine screening for PCBs or the interim precautionary measures outlined in this follow-up assessment, please feel free to contact me at (203) 255-7363.

Thank you.

c: Meg Brown
Central Office Administration
All Principals/Headmasters
First Selectman
BOF Chairman
RTM Moderator
Sands Cleary – Health Director

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WOODARD &CURRAN

September 16, 2013

Salvatore Morabito
Manager of Construction, Security & Safety
Fairfield Public Schools
501 Kings Highway East
Fairfield, CT 06825

Re: **Follow-up Building Surveys**
Fairfield Public Schools

Dear Mr. Morabito:

As requested, Woodard & Curran has completed a follow-up building survey and assessment associated with potential polychlorinated biphenyl (PCB)-containing building materials that may be present in the different school buildings within the Fairfield Public School District. These activities were conducted consistent with our authorized May 9, 2013 proposal.

One of the near term or best management practice recommendations provided in the April 4, 2013 Assessment of PCBs in Building Materials – Fairfield School Buildings report was to conduct follow-up evaluations of suspect materials at select schools with follow-up interim measures, as needed, to potentially include covering suspect sealants, etc. In July 2013, these follow-up building visits were conducted at each of the schools previously surveyed and the results incorporated into revised building survey reports, which are attached to this letter.

Woodard & Curran appreciates the opportunity to assist Fairfield Public Schools in this matter. If you have any questions or require further information, please feel free to email me at jhamel@woodardcurran.com or call me at (978) 557-8150.

Sincerely,

WOODARD & CURRAN INC.

Jeffrey A. Hamel, LSP, LEP
Senior Vice President

ELEMENTARY SCHOOLS

Building Survey - Timothy Dwight Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Timothy Dwight Elementary School on February 1, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 1600 Redding Road, Fairfield, CT

Initial Construction Date: 1962

Additions/Renovations: 1969, 2000

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, and a wood panel drop ceiling with ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Timothy Dwight Elementary School is presented below.

Construction Date – The initial construction date of the building was 1962, followed by a major addition in 1969; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. However, the small building addition, constructed in 2000, falls outside of this timeframe; therefore the subject building area only includes the original building construction and the 1969 addition.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have a wood panel drop ceiling with a metal structure and ductwork above. Spray-on fireproofing was observed on the metal structure through an opening in the drop ceiling.

Photos of typical building sealants observed during the building survey are provided below.

Spray-on fireproofing above gym ceiling

Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence or concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 28 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 68% of the interior samples and 17% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed windows and single-paned aluminum framed windows. Numerous windows appear to have been updated over time and repair projects (replacement sealants) are evident in some areas. According to School District Records, double paned exterior windows we installed post-1980 after the ban on PCBs in Building Materials.
- Spray-on fireproofing material was present on the metal framed ceiling joists within the gymnasium.
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 ACM report). During the building surveys, similar stone tile flooring was observed at Timothy Dwight Elementary. It is our understanding, based on discussion with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of

additional coatings after the time PCBs were banned (i.e., post 1979) would isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).

- A review of the data indicated that 68% of the interior samples and 17% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile area described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as “low”, visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as “medium”, application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the management sections at the end of this document.

In addition, a further inspection of the spray on Fireproofing observed on the gymnasium ceiling, in the context of the Osborn Hill gymnasium assessment, was also performed during the follow up survey. Spray-on fireproofing materials observed on the metal framed ceiling joists at the Osborn Hill Elementary School were reported to contain polychlorinated biphenyls (PCBs) at a concentration of 30,000 ppm. Inspection of the gym ceilings of the other schools included in the survey indicated that a spray-on coating was present on the metal framed ceiling joists at the Timothy Dwight Elementary School as well. Although this coating did not appear similar to the Osborn Hill coating, the inspection was limited given that an aerial lift was not available and the inspection was performed from the floor surface. Spray-on coatings were not observed at any other schools.

As a follow-up evaluation, an aerial lift was used to perform a more thorough inspection of the spray-on coating at the Timothy Dwight gymnasium. On June 17, 2013, the ceiling was visually inspected as well

as materials from both the Osborn Hill ceiling and Timothy Dwight ceiling collected for chlorine screening. A summary of the comparison is provided below.

The spray-on material was observed on metal framed ceiling joists in the gym overhead areas of both buildings. The ceiling joists are approximately 20 to 25 feet above the gym floors. Unlike Osborn Hill, at the Timothy Dwight School, a wooden lathe ceiling is present along the bottom of the joists (access to the joists was via an access opening); therefore the spray-on coating is not as accessible or visible as at Osborn Hill. See photos below.

Osborn Hill

Timothy Dwight

The spray-on fireproofing materials observed at both the Osborn Hill and Timothy Dwight Schools were white, brittle, and moderately hard (breaks apart with hand scraper). At Timothy Dwight, the materials appeared to be in good condition with no pieces observed on the top of the wood ceiling.

Spray-on Fireproofing at Timothy Dwight

During the follow-up survey, samples of the spray-on materials were collected from both schools for chlorine screening using the XRF. Because the overhead area was not accessible at the Osborn Hill Elementary School, the samples were collected from the floor where materials were found. At the Timothy Dwight School, the ceiling was accessed by an aerial lift. Results are summarized on the table below:

Location	% chlorine
Osborn Hill Elementary School	1.21
Timothy Dwight School	1.93

Although the % chlorine results were similar between the two materials, chlorine is a common component of many different building materials and chlorine presence does not directly correlate to PCB presence. As described above, positive chlorine presence detected with the XRF renders an inconclusive finding with regard to PCB presence.

The results of the follow-up inspection did not provide any new information to indicate that these materials are different from each other. As described in previous submittals, the primary pathways of potential exposure to these materials are through direct contact (i.e., touching the material) or inhalation (i.e., breathing in particulates, etc.). Because the Osborn Hill gym has been isolated/contained, there are no longer any exposure pathways to current occupants at Osborn Hill. With regard to the Timothy Dwight gym, the spray on coating is located approximately 20 to 25 feet above the gym floor, therefore, there is a low to no potential for direct contact of the materials by staff or students. The presence of the wood lathe ceiling further isolates the overhead from the main gym. In addition, the coating appeared to be in good condition with no pieces observed on the top of the wood ceiling. Although some fractions of PCBs can volatilize, PCBs are generally "heavier" molecules that do not tend to volatilize into air readily; therefore, the primary inhalation pathway can be material particulates that become airborne. As indicated above, the subject coating above the gym is in good condition with no observable pieces or other debris noted on the wooden lathe ceiling (beneath the coated joists).

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk

- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, several suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Timothy Dwight Elementary School

Sample ID	Chlorine Screening by XRF[1]	Location	Materials	Description
Wall Seam Screening Results				
TD-21-011	4.84	Room 21	CMU to steel beam	Intact, Painted
TD-17-014	2.14	Room 20/ Room 17	CMU to door beam (vertical)	Gray, Brittle, Painted
TD-18-016	3.82	Room 19/ Room 18	CMU to steel beam	
TD-GYM-028	2.7	Gym interior	vertical steel beam to CMU	Gray, semi-pliable, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TD-APR-003	0.0848	All Purpose Room	Steel door window metal to glass	Silicone, Pliable, Intact, Exposed
TD-APR-004	4.32	All Purpose Room	Steel door frame to CMU	
TD-7-009	0.2778	Room 7	Int door frame to CMU	Brittle, Chipping, Painted
TD-21-010	0.8487	Room 21	Int door frame to CMU	Hard, Painted
TD-17-015	0.2742	Room 20/ Room 17	Door frame to CMU	Pliable, Intact, Exposed
TD-GH-019	0.1956	Gym Entrance/ Hall	Steel frame to CMU	Hard, Intact, Painted
TD-GH-018	0.136	Gym Entrance/ Hall	Steel frame to glass	Gray, Brittle, Painted
TD-BR-020	0.1897	Boiler Room	Steel door frame to CMU	White, Pliable, Painted
TD-ME-022	0.0863	Main Entrance	Int door frame to brick	Beige, Brittle, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
Door Caulking Screening Results	0.2309	All Purpose Room	DPA window metal to metal/black sill	Beige, Pliable, Intact, Exposed
TD-APR-002	0.2949	All Purpose Room	DPA window sill joint	Black, Pliable, Intact, Exposed
TD-7-007	0.5737	Room 7	Sill to sill	Black, Pliable, Intact, Exposed
TD-K2-013	0.1316	Room K2/ Room 15	Sill to sill	Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TD-APR-005	0.4921	All Purpose Room	Fiberboard material (from Bill)	Exposed
TD-FR-017	0.1086	Faculty Room	Sink edge	
TD-BR-021	0.0391	Boiler Room	Pipe	Red, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 1, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - Timothy Dwight Elementary School

Sample ID	Chlorine Screening by XRF[1]	Location	Materials	Description
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TD-7-006	0.2485	Room 7	Ext door frame to CMU	Hard, Intact, Painted
TD-BE-024	4.41	Building Exterior	APR steel door frame to brick	
TD-BE-026	2.17	Building Exterior	Gym hall door frame to brick	Gray, Pliable, Intact, Exposed
TD-BE-027	0.6015	Building Exterior	Classroom frame to brick	Brittle, Painted
Window Caulking Screening Results				
Sample ID	**XRF[1]**	**Location**	**Materials**	**Description**
TD-7-008	0.5835	Room 7	Ext window metal to metal/sill	Beige, Pliable, Intact, Exposed
TD-15-012	0.1216	Room K2/ Room 15	Ext window metal to metal	Beige, Intact, Exposed
TD-BE-023	0.0572	Building Exterior	DPA window	Beige, Pliable, Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TD-BE-025	1.34	Building Exterior	Vent to brick	Brittle, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 1, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 3
Proposed Interim Measures - Timothy Dwight Elementary School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Materials	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 1	TD-21-011 TD-17-014 TD-18-016 TD-GYM-028	4.84 2.14 3.82 2.7	Interior	Gray, hard caulking observed along CMU to steel beams and door frames at 9 interior locations within the portion of the school constructed in 1969. Sealant is in good condition and covered with an existing coating of paint.	Classrooms 17, 18, 19, 20, and 21; Faculty Area; Resource Room	Low	Conduct periodic visual inspection to check for cracks, chips, or wearing of paint. Repaint as needed to maintain existing coating.	Narrow bead of intact, caulking along vertical CMU to metal joints with an existing coating of paint.
Type 6	TD-BE-025	1.34	Exterior	Gray, brittle caulking along three 20 foot long exterior boiler room vent to brick wall joints. Material is cracking and not painted.	North wall of boiler room (exterior)	Low	Conduct periodic visual inspections to check for cracks, chips, or wearing of caulking and to confirm use of the surrounding areas.	Materials located on exterior of building along boiler room and away from outdoor areas frequented by staff and students (e.g., playgrounds); therefore limited potential for direct contact.
Doors								
Type 2	TD-APR-004	4.32	Interior	White, hard, brittle caulking along interior side of All Purpose Room door frame (1 location). Material is painted.	All Purpose Room	Low	Conduct periodic visual inspection to check for cracks, chips, or wearing of paint. Repaint as needed to maintain existing coating.	Narrow bead of caulking along joints of single door frame with an existing coating of paint.
Type 3	TD-21-010	0.85	Interior	Gray, hard caulking along CMU to metal door frames in corridor outside Rooms 20 and 21 (4 doors). Material is in good condition and covered with an existing coating of paint. Some cracking observed on existing paint.	Classrooms 20 and 21; Storage Room; Resource Room	Low	Conduct periodic visual inspection to check for cracks, chips, or wearing of paint. Repaint as needed to maintain existing coating.	Narrow bead of caulking with existing coating along door frames within corridor area.
Type 7	TD-BE-026	2.17	Exterior	Gray, pliable caulking along 8 exterior door frames to brick walls in the portion of the school constructed in 1969. Material is in good physical condition and not painted.	Classrooms 17, 18, 19, 20, and 21; Faculty Area; Gymnasium; and Exterior doors to southern corridors	Medium	Apply new bead of caulking or similar coating over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of installed coating.	Narrow bead of caulking along masonry to frame joints at exterior locations. Application of additional coating will further isolate materials.
Type 8	TD-BE-024 TD-BE-27	0.60 - 4.41	Exterior	Gray, hard, pliable caulking along exterior joints of 24 doors in the portion of the school constructed in 1962. Materials are slightly cracking and not painted (limited number of joints are painted).	Classrooms 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14; Kindergarten K1 and K2; All Purpose Room; West Side Vestibule Entry; Boiler Room Entry; Transformer Room Entry; Interior Doors near Restroom in Northeast Corner of Building	Medium	Apply a new bead of caulking or similar coating over existing caulking. Conduct periodic visual inspections of newly applied coatings.	Narrow bead of caulking along masonry to frame joints at exterior locations; caulking located in areas used as playgrounds.
Windows								
Type 4	TD-7-007	0.57	Interior	Black, pliable caulking along inteior window sills of the double-paned windows. Material is in good physical condition and not painted.	Alll Double Paned Windows	Medium	None	According to School District Records, subject windows (and caulking) were installed post-1980 after the ban on PCBs in building materials.
Type 5	TD-7-008	0.58	Exterior	Beige, pliable caulking along exterior side of double-paned windows. Materials are in good physical condition and not painted.	All Double Paned Windows	Low	None	According to School District Records, subject windows (and caulking) were installed post-1980 after the ban on PCBs in building materials.
Other								
Tile Sealer/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Interior hallways as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:

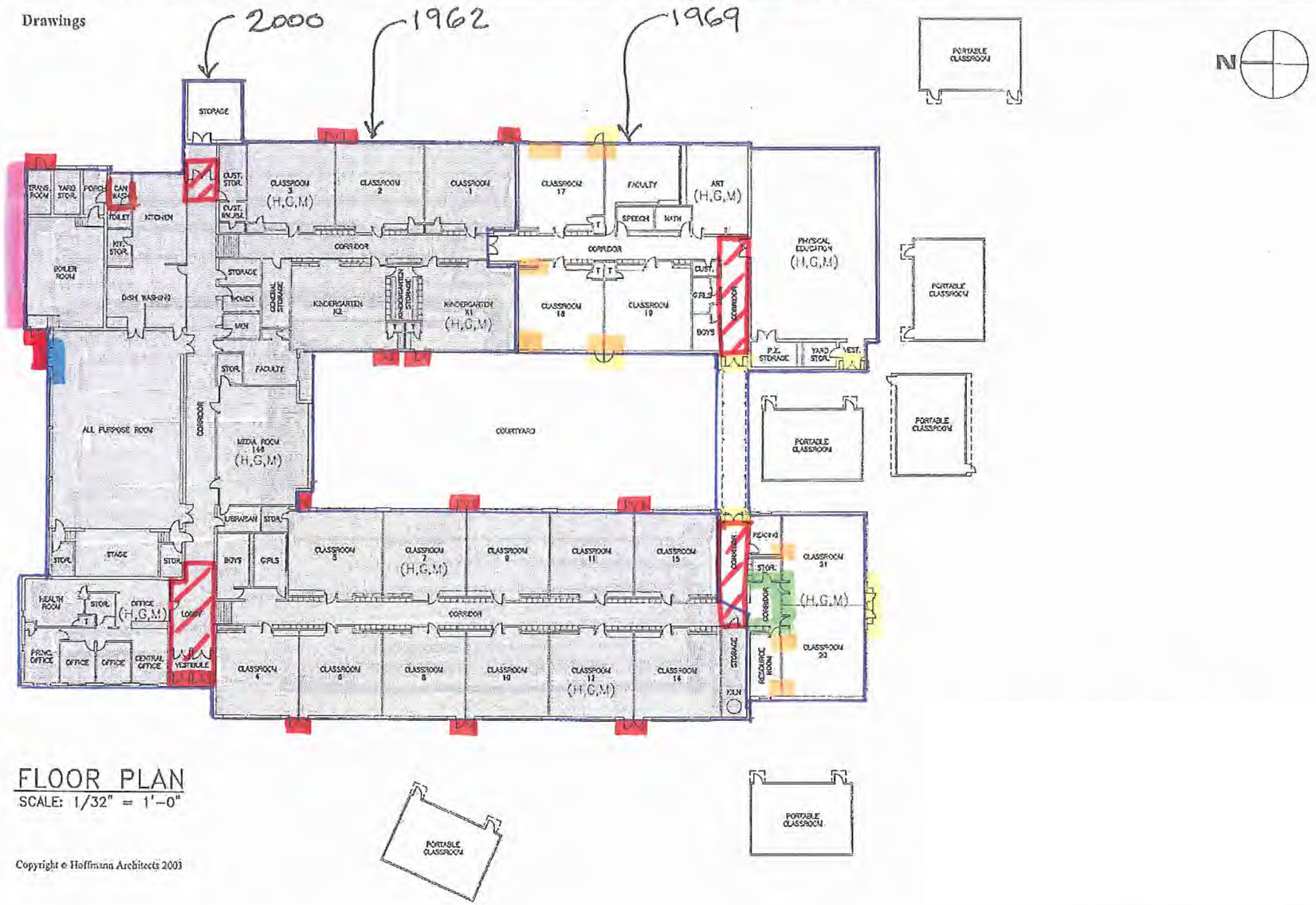
1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

TIMOTHY DWIGHT SCHOOL

Notes:
1. Types of caulking as presented in Table 3
2. Types 4 and 5 from Table 3 associated with all double paned windows (not shown)

- Type 1 - Interior CMU to steel beam and door frame joints.
- Type 2 - All Purpose Room interior door frame joint.
- Type 3 - Interior door frame joints.
- Type 6 - Exterior boiler room vent to brick wall joints.
- Type 7 - Exterior door frame joints (1969 portion).
- Type 8 - Exterior door frame joints (1962 portion).
- Tile Sealer/Finisher

Drawings



FLOOR PLAN
SCALE: 1/32" = 1'-0"

Building Survey - Jennings Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Jennings Elementary School on February 6, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 31 Palm Drive, Fairfield, CT

Initial Construction Date: 1967

Additions/Renovations: 2000 and 2002

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, and tectum ceiling panels in a drop ceiling with overhead ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Jennings Elementary School is presented below.

Construction Date – The initial construction date of the building was 1967; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. The building additions in 2000 and 2002 fall outside of this timeframe; therefore the subject building area only includes the original building construction.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 30 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 43% of the interior samples and 44% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the dates of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building with double-paned aluminum framed windows and single-paned windows. According to School District Records, the double paned exterior windows were installed post 1980 after the ban on PCBs in Building Materials.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building surveys, similar stone tile flooring was observed at Jennings Elementary School. It is our understanding, based on discussion with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., post

1979) would isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).

- A review of the data indicated that 43% of the interior samples and 44% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile access described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to

occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, several suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Jennings Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-CAF-019	5.3	Cafeteria	Steel support beam to CMU	Hard, Intact, Painted
JS-GYM-012	5.23	Gym	Steel support beam to CMU	Gray, Hard, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-R22E-022	0.2894	Room 22 Entryway	Int door window to glass	Gray, Pliable, Intact, Exposed
JS-R22E-021	0.0343	Room 22 Entryway	Door window to glass	Brown, Pliable, Intact
JS-GYM-013	0.5912	Gym	Door, steel frame to CMU	Hard, Intact, Painted
JS-GYM-011	5.81	Gym	Int door (stage) steel frame to CMU	Hard, Intact, Painted
JS-GYM-010	2.55	Gym	Int door (stage) steel frame to CMU	Gray, Hard, Intact, Painted
JS-11-009	3.04	Room 11	Bathroom door frame to fiberboard	Gray, Brittle, Painted
JS-5-008	1.16	Room 5	Steel door frame to painted CMU	
JS-1-004	6.84	Room 1	Int door frame steel to CMU	Gray, Hard, Brittle, Painted
JS-1-003	0.5803	Room 1	Door frame steel to CMU	Painted, partially separated
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-LMC-014	0.1178	Library Media Center	DPA window frame to CMU and sill	Pliable, Intact, Exposed
JS-12-006	10.29	Room 12	Int SPA window glass to metal	Pliable, Intact, Exposed
JS-12-005	1.81	Room 12	DPA window frame to CMU and sill	Gray, Pliable, Intact, Exposed
JS-1-001	0.2844	Room 1	Window metal frame to sill	White, Pliable, Intact, Exposed
JS-2-002	0.9063	Room 1	Window metal frame to CMU	Gray, Pliable, Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-BR-018	0.1507	Boiler Room	Piping	White, Pliable, Intact, Exposed
JS-BR-017	0.0315	Boiler Room	HVAC piping	Red, Hard, Intact, Exposed
JS-BR-016	0.0166	Boiler Room	HVAC piping	Red, Pliable, Intact, Exposed
JS-BR-015	0.0613	Boiler Room	Piping to CMU	Pink, Hard, Exposed
JS-5-007	0.3546	Room 5	Counter top	White, Hard, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 6, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - Jennings Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-BE-031	0.0984	Building Exterior	Horizontal seam above concrete block	Gray, Brittle, Exposed
JS-BE-030	0.3774	Building Exterior	Guidance exterior brick to concrete	Beige, Pliable, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-BE-025	9.73	Building Exterior	Room 11 door frame to concrete	Gray over clear, Pliable, Intact, Exposed
JS-BE-024	5.2	Building Exterior	Ext door frame to unpainted brick	Gray, Pliable, Intact, Partly Painted
JS-R7E-023	4	Room 7 Entryway	Steel door frame to unpainted brick	Gray, Pliable, Intact, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
JS-BE-029	0.4681	Building Exterior	Room 10 above window lintel	White over gray, Pliable, Intact, Exposed
JS-BE-028	0.9378	Building Exterior	Room 10 above window lintel	Gray, Pliable, Exposed
JS-BE-027	6.35	Building Exterior	Room 11 DPA flashing to concrete/brick	Gray, Pliabe, Partly Exposed
JS-BE-026	0.1497	Building Exterior	Room 11 DPA window flashing to concrete	White, Pliable, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 6, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 3
Proposed Interim Measures - Jennings Elementary School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 4	JS-CAF-012 JS-CAF-019	5.23 and 5.3	Interior	Gray, hard, caulking along steel beam to CMU block and window joints. Materials are in good physical condition and painted.	Cafeteria Wall - 3 joints Gymnasium Wall - 3 joints Stage Window - 1 window joint Back Wall of Stage - 3 joints East Side of LMC - 1 joint	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Doors								
Type 5	JS-1-004 JS-11-009 JS-GYM-010 JS-GYM-011	2.55 - 6.84	Interior	Gray, hard, caulking along interior door to wall joints. Materials are in good physical condition and painted.	Interior door caulking within the 1967 portion of the building.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 6	JS-1-003 JS-5-008 JS-GYM-013	0.58 - 1.16	Interior	Gray, hard, caulking along interior door frame to wall joints of exterior doors. Materials are in good physical condition and painted. Aluminum strips present over joints in the cafeteria.	Interior door joints of exterior doors within the 1967 portion of the building.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 7	JS-BE-025	9.73	Exterior	Gray, pliable, caulking on exterior door frame to brick wall joints of exterior classroom doors. Materials are in good physical condition and not painted.	Exterior door joints of exterior doors within the 1967 portion of the buidling.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of caulking along exterior locations proximate to playground areas. Application of cover materials will further isolate the materials.
Type 9	JS-RTE-023 JS-BE-024	4 and 5.2	Exterior	Gray, pliable, caulking on exterior door frames of building main entryways. Materials are in good physical condition and painted.	Main entry ways within the 1967 portion of the building.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along exterior locations.
Windows								
Type 1	JS-12-006	10.29	Interior	Gray, soft, glazing sealants between glass and frames on 11 interior single paned classroom windows. Materials are in good physical condition with some areas of observed deterioration (glazing sealant has moved out of the joint in isolated areas).	Classrooms 4, 5, 6, 7, and 9 through 25.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated materials along interior joints. Application of cover materials will further isolate the materials.
Type 2	JS-12-005	1.81	Interior	White, pliable caulking along CMU block to double paned window frame joints on interior side of exterior windows. Materials are in good physical condition and not painted.	Double paned windows within the 1967 portion of the building.	Medium	None	According to School District Records, subject windows and caulking were installed post 1980 after the ban on PCBs in building materials.
Type 3	JS-2-002	0.91	Interior	Gray, pliable caulking along CMU block to double paned window frame joints on interior side of exterior windows. Materials are in good physical condition and not painted.	Double paned windows within the 1967 portion of the building.	Medium	None	According to School District Records, subject windows and caulking were installed post 1980 after the ban on PCBs in building materials.
Type 8	JS-BE-027 JS-BE-028	0.94 and 6.35	Exterior	Gray, pliable, caulking along exterior window sills and lintels. Materials are in good physical condition and not painted.	Exterior windows within the 1967 poriton of the building.	Medium	None	According to School District Records, subject windows and caulking were installed post 1980 after the ban on PCBs in building materials.
Other								
Tile Sealer/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good condition with no areas of flaking or cracking observed.	Interior hallways as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:

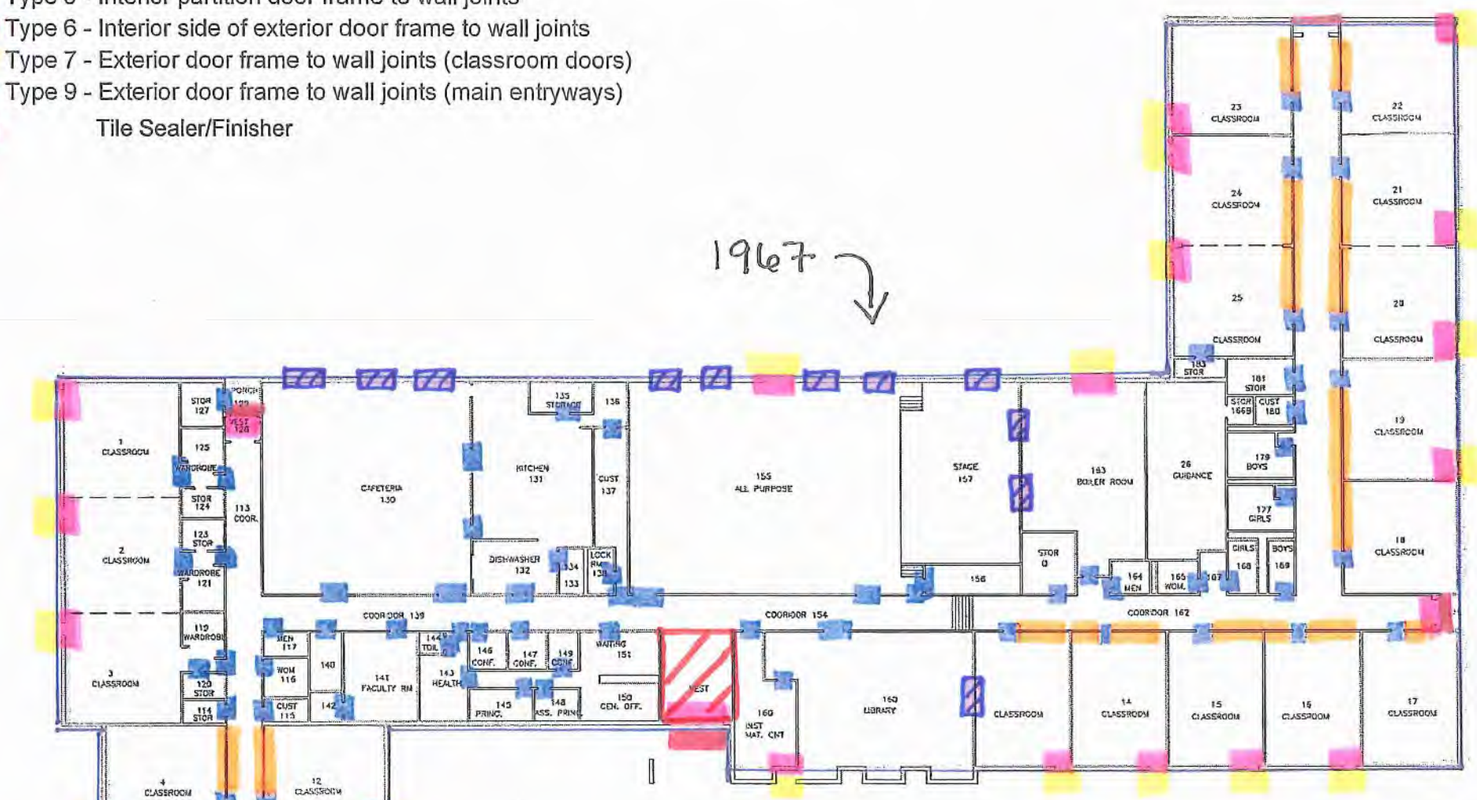
1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

Jennings Elementary School

Type 1 - Interior Classroom window glazing sealants (classrooms to hallways)
Type 4 - Interior CMU to steel beam vertical joints
Type 5 - Interior partition door frame to wall joints
Type 6 - Interior side of exterior door frame to wall joints
Type 7 - Exterior door frame to wall joints (classroom doors)
Type 9 - Exterior door frame to wall joints (main entryways)
Tile Sealer/Finisher

PORTABLE CLASSROOM

1967



2000

Existing Floor Plan
1/16" = 1'-0"
Existing information obtained from plans prepared by others
Room names have not been verified.

Notes:
1. Types of caulking as presented on Table 3.
2. Types 2,3, and 8 from Table 3 associated with all double paned windows (not shown).

REVISED:
SCALE: AS NOTED
DATE: 11-26-06
DRAWN:

Jennings Elementary School
Fairfield Connecticut

EXISTING FLOOR PLAN

26-21

Building Survey – Roger Sherman Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Roger Sherman Elementary School on February 4, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 250 Fern Street, Fairfield, CT

Initial Construction Date: 1962

Additions/Renovations: 1978, 2000, 2008, and 2012

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, wood paneling, in-wall vents and wall mounted radiators, and tectum ceiling panels between exposed steel beams.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Roger Sherman Elementary School is presented below.

Construction Date – The initial construction date of the building was 1962; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. One of the building renovations, added in 1978 also falls within this timeframe. However, the

three building renovations constructed in 2000, 2008, and 2012, fall outside of this timeframe; therefore the subject building area only includes the original building construction and the 1978 renovation.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various sealants, caulking, and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data – Previous samples of suspect materials were collected and analyzed for PCBs during past renovations. Three exterior sealant samples were collected including window frame caulking (PCBs – non-detect and 1.6 ppm) and exterior expansion joint caulking (non-detect). Three interior sealant samples were collected including window caulking (non-detect), door caulking (4.3 ppm) and window glazing sealant (1.1 ppm). These concentrations are well below the 50 ppm Federal regulatory threshold for PCB Bulk Product Waste.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 29 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 86% of the interior samples and 43% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed windows and single-paned aluminum framed windows. According to School District Records, the double paned windows were installed post-1980 after the ban on PCBs in building materials.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***

- The stone tile flooring, reportedly to contain PCBs in the floor sealant at Osborn Hill, was **not** observed at Roger Sherman Elementary.
- Results of analytical testing indicated that PCBs < 50 ppm were present in interior and exterior caulking and glazing sealants.
- A review of the data indicated that 86% of the interior samples and 43% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as “low”, visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as “medium”, application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material

within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, several suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Roger Sherman Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-1-002	4.08	Room 1	vertical steel beam to CMU	Semi-Pliable, Brittle, Exposed
ROG-8-006	0.0534	Room 8	vertical steel beam to CMU	Painted, Hard, Intact
ROG-CR-010	0.1359	Conf. Room	Wood to CMU joint	White/Yellow, Pliable, Intact, Painted
ROG-OH-011	0.1048	Offices	CMU to drywall	White, Pliable, Intact, Painted
ROG-BR-015	0.3356	Boiler Room	Painted wall to brick	Black, Brittle, Exposed
ROG-APR-017	5.6	APR/Stage	Steel vert. beam to CMU	Gray, Brittle, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-1-003	4.96	Room 1	Steel door frame to CMU	Brittle, Exposed
ROG-7-004	0.0869	Room 7	Int steel frame door to painted CMU	Hard, Intact, Exposed
ROG-8-005	0.1382	Room 8	Door frame	Painted, Hard, Intact
ROG-MC-008	0.0859	Media Center	Steel door frame to painted CMU	Pliable, Intact, Painted
ROG-JR-012	0.3181	Custodian	Steel door frame to CMU	Gray, Hard, Intact, Painted
ROG-R8E-020	0.1173	Entrance: Room 8	Steel door frame to brick	Hard, Brittle, Exposed
ROG-ME-021	0.0844	Main Entrance	Steel door to CMU	
ROG-GYM-029	0.0836	GYM	Door frame to CMU	Gray, Pliable, Intact, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-1-001	0.2058	Room 1	Metal frame to sill and frame to CMU	Pliable, Intact, Exposed
ROG-MC-009	0.0667	Media Center	Metal frame to sill on small office windows	Gray, Pliable, Intact, Exposed
ROG-GH-018	0.1457	Gym Hall	Glass to steel frame	Black/gray, Pliable, Intact, Exposed
ROG-GH-019	0.138	Gym Hall	Glass to steel frame replacement	Pliable, Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-10-007	0.0364	Room 10	Around water fountain	Pliable, Intact, Exposed
ROG-JR-013	0.087	Custodian	Pipe to wall joint	Red, Pliable, Exposed
ROG-JR-014	0.0763	Boiler Room	Pipe to wall joint	Dark Red, Brittle, Exposed
ROG-BR-016	0.1126	Boiler Room	Pipe to CMU	Red, Brittle, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 4, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - Roger Sherman Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-CY-024	2.89	Courtyard	Brick to brick	Gray, Hard, Weathered, Exposed
ROG-BE-026	0.1551	Building Exterior	Concrete to brick	Brown, Pliable, Intact, Exposed
ROG-BE-028	12.15	Building Exterior	Red brick to white brick	Gray, Pliable, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-CY-022	2.72	Courtyard	Steel door to brick	White, Brittle, Exposed
ROG-BE-027	1.74	Building Exterior	Brick to steel door frame	Pliable, Intact, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
ROG-CY-023	0.079	Courtyard	DPA window frame to brick	Gray, Pliable, Intact, Exposed
ROG-BE-025	0.061	Building Exterior	DPA window frame to brick	Gray, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 4, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above Chlorine indicator threshold

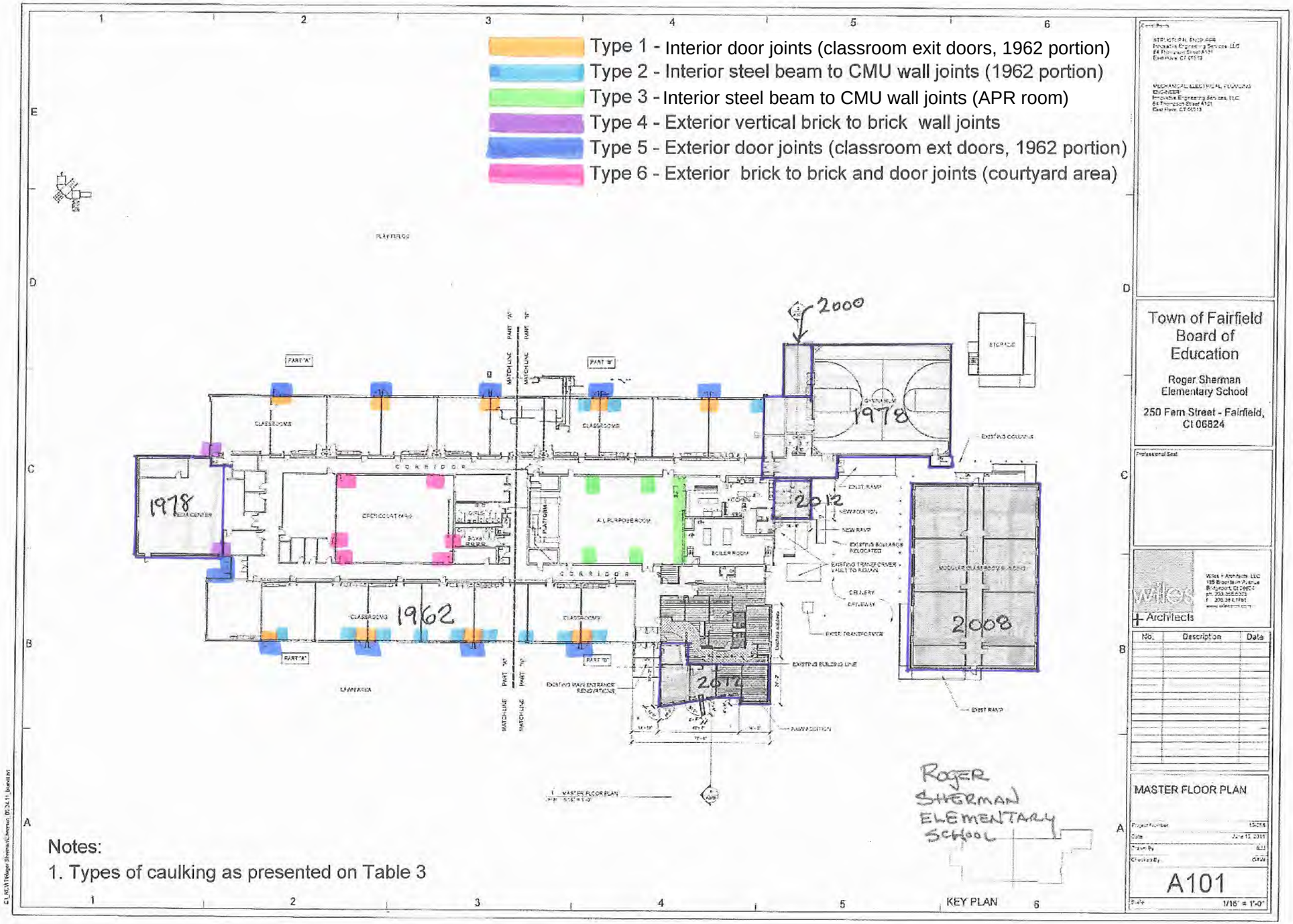
Table 3
Proposed Interim Measures - Roger Sherman Elementary School

Type [(1)]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 2	ROG-1-002	4.08	Interior	Gray, soft, pliable caulking along interior vertical steel beam to CMU joints. Materials are in good physical condition and not painted.	Interior side of exterior walls within all classrooms along the southern half and three classrooms along the northern half of the portion of the building constructed in 1962. Caulking along similar joints in other areas is not the same or not present.	Medium	Apply new bead of caulking or similar coating over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of applied caulking.	Narrow bead of intact caulking along interior locations. Application of new coating will further isolate the materials.
Type 3	ROG-APR-017	5.6	Interior	Gray, brittle caulking along horizontal and vertical interior steel support beam to CMU wall joints within the APR Room. Materials are painted.	Materials are in the APR room. Vertical joints located along the north (2 joints) and south (2 joints) walls and at the corners of the west wall (2 joints) with a horizontal joint at the wall to ceiling beam across the west wall.	Low	Conduct periodic visual inspection to check for cracks, chips, or wearing of the existing coating. Repaint as needed to maintain existing coating.	Narrow beads of coated interior caulking, maintaining existing coating will further isolate the materials.
Type 4	ROG-BE-028	12.15	Exterior	Gray, pliable caulking along exterior brick to brick expansion joints at the junction between the 1962 and 1978 sections of the building. Materials are in good physical condition and not painted.	Two vertical joints at the junction between the 1962 and southern 1978 portions of the building. Joints located away from areas of high frequency use.	Low	Conduct periodic visual inspections to check for damage or deterioration of existing caulking and to confirm use of surrounding areas.	Narrow bead of intact caulking along exterior locations away from areas of high frequency use (i.e., located in landscaped areas).
Type 6	ROG-CY-022 ROG-CY-024	2.72 and 2.89	Exterior	Gray, hard caulking along exterior brick to brick and brick to door frame joints in the courtyard area. Materials are weathered and cracking and not painted.	Vertical brick to brick wall joints and door frame joints in the courtyard area.	Medium	Apply bead of caulking or equivalent material over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of applied caulking.	Narrow bead of intact caulking along exterior joints; materials located in vicinity of garden beds and common areas (the courtyard). Application of new caulking will further isolate these materials.
Doors								
Type 1	ROG-1-003	4.96	Interior	Gray, hard, brittle caulking along interior door to concrete wall joints. Materials are cracking and not painted.	Interior side of exterior classroom doors in the 1962 portion of the building.	Medium	Apply bead of caulking or equivalent material over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of applied caulking.	Narrow bead of intact caulking along interior locations. Application of new caulking will further isolate the materials.
Type 5	ROG-BE-027	1.74	Exterior	Gray, pliable caulking along exterior door frame to brick or concrete wall joints. Materials are in good physical condition with limited caulking and not painted.	Exterior side of exterior classroom doors in the 1962 portion of the building.	Low	Conduct periodic visual inspections to check for damage or deterioration of existing caulking and to confirm use of surrounding areas.	Narrow bead of intact caulking along exterior joints located away from areas frequented by staff and students.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

ROGER SHERMAN ELEMENTARY SCHOOL



Notes:

1. Types of caulking as presented on Table 3

Town of Fairfield
Board of Education

Roger Sherman Elementary School

250 Fern Street - Fairfield, Ct 06824

Wiles + Architects

No.	Description	Date

MASTER FLOOR PLAN

A101

Building Survey - Riverfield Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Riverfield Elementary School on January 30, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 1625 Mill Plain Road, Fairfield, CT

Initial Construction Date: 1959

Additions/Renovations: 1971, post-1983 (media center), and 2000

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, tectum ceiling panels with exposed structural metal, and overhead ductwork and vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Riverfield Elementary School is presented below.

Construction Date – The initial construction date of the building was 1959 and the primary addition was built in 1971; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. However the media center (post-1983), and the

building addition constructed in 2000, fall outside of this timeframe; therefore the subject building area only includes the original building construction and the 1971 addition.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January survey, 35 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 92% of the interior samples and 50% of the exterior samples (primarily from extension joint sealants) screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed windows and single-paned aluminum framed windows. According to School District Records, the double paned windows were installed post-1980 after the ban on PCBs in building materials.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***
- The stone tile flooring, reportedly to contain PCBs in the floor sealant at Osborn Hill, was **not** observed at Riverfield Elementary.
- A review of the data indicated that 92% of the interior samples and 50% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

<u>Near Term or Best Management Practices</u>

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means

- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, two suspect interior and exterior materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measure at these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Riverfield Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-JO-004	0.302	Room JO	Wall expansion joint CMU to metal	Gray, Intact, Painted
RS-R23H-013	0.3315	Room 23 Hallway	Block to Block	Intact, Painted
RS-6-017	0.1152	Room 6	Wall to metal beam	Gray, Intact, Painted
RS-8-018	0.0928	Room 8	CMU to brick	Tan, Worn, Painted
RS-R9H-019	0.1027	Room 9 Hallway	Brick to CMU joint	Beige over Black, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BR-001	0.2385	Boiler Room	Int door metal frame to CMU	Gray, Intact, Painted
RS-JO-005	0.1428	Room JO	Door frame to CMU	Intact, Painted
RS-ME-006	0.2907	Main Entrance	Steel door frame to brick	Gray, Intact, Painted
RS-2-009	0.1052	Room 2	Door frame metal to metal	Gray
RS-R2H-011	0.3018	Room 2 Hallway	Door frame to CMU	Gray, Intact, Painted
RS-21-014	0.2786	Room 21	Door frame to CMU (bathroom)	Gray, Intact, Painted
RS-7-015	0.2511	Room 7	Door frame to CMU	Intact, Painted
RS-6-016	0.0737	Room 6	Ext door frame to CMU	Intact, Exposed
RS-KIT-022	0.409	Kitchen	Ext door metal to glass	Intact, Exposed
RS-GYM-023	3.69	Gym Hall	Door frame to brick	Intact, Painted
RS-GYM-024	0.3048	Gym	Steel door frame to CMU	Intact, Partly Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-JO-003	0.355	Room JO	DPA window metal to metal/CMU	White, Intact, Exposed
RS-ME-007	0.0657	Main Entrance	Window metal to glass	Black silicone, Intact, Painted
RS-2-008	0.0364	Room 2	DPA window metal to sill	Gray, Intact, Exposed
RS-25-012	0.076	Room 25	Window metal to metal at door frame	Gray, Worn, Exposed
RS-R9H-020	0.117	Room 9 Hallway	Window metal to glass (replacement)	Silicone, Intact, Partly Exposed
RS-LMC-021	6.99	Library Media Center	Window frame to brick	Brittle, Exposed
RS-CR-025	0.3172	Conference Room	Window frame to sill	Black, Brittle, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BR-002	0.0699	Boiler Room	Duct	Red, Intact, Exposed
RS-3-010	0.1052	Room 3	Metal to metal panel	Black, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 30, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above Chlorine threshold

Table 2
Exterior Chlorine Screening Results - Riverfield Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BE-027	3.06	Building Exterior	Brick to main entrance overhang	Brittle, Partly Exposed
RS-BE-029	3.63	Building Exterior	Brick to brick	Black over Gray, Intact, Exposed
RS-BE-031	2.28	Building Exterior	Brick to brick	Gray, Exposed
RS-BE-032	0.5098	Building Exterior	Brick to brick on gym	Black, Intact, Exposed
RS-BE-034	0.2013	Building Exterior	Brick to brick on gym	Brown, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BE-028	0.184	Building Exterior	Aluminium door frame to window frame	Gray, Intact, Exposed
RS-BE-030	4.23	Building Exterior	Room 9 steel door frame to brick	Brown over Gray, Intact, Partially Exposed
RS-BE-033	0.2422	Building Exterior	Steel door frame to brick	Gray, Intact, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BE-026	0.3954	Building Exterior	DPA window metal to metal/brick	Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
RS-BE-035	0.0947	Building Exterior	Brick to vent	Multilple layers, Weathered, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 30, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above Chlorine threshold

Table 3
Proposed Interim Measures - Riverfield Elementary School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 4	RS-BE-029 RS-BE-031	2.28 and 3.63	Exterior	Gray, pliable, tacky caulking along exterior brick to brick expansion joints. Materials are in good physical condition with limited cracking observed. Caulking along northern joint coated with black caulking.	Two joints at junction between 1959 portion of the building and the southern 1971 addition.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of hard coated caulking along exterior joints with limited accessability.
Type 5	RS-BE-032	0.51	Exterior	Black, pliable, caulking along exterior brick to brick expansion joints. Caulking is in good physical condition and not painted.	Two brick to brick expansion joints on the 1971 gymnasium wall.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along exterior locations proximate to playground area. Application of cover material will further isolate materials.
Type 6	RS-BE-027	3.06	Exterior	Gray, hard caulking along horiztonal brick wall to overhang joint approximately 10 feet above the ground. Materials are painted.	Horizontal joints at 1971 main entry, located approximately 10 feet above the ground surface.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along exterior joints. Limited accessability due to 10ft above ground.
Doors								
Type 1	RS-GYM-023	3.69	Interior	Brown, pliable caulking along interior door frame to brick joints. Materials are in good physical condition and painted.	West exit from 1971 gymnasium. Caulking not observed on other door joints within northern portion of 1971 addition.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 3	RS-BE-030	4.23	Exterior	Brown, tacky caulking along exterior door frame to brick joints. Not observed on other main entry doors. Materials are in good physical condition and coated with a glazing type material.	Main entry door way between classrooms 8 and 9.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along exterior joints.
Windows								
Type 2	RS-LMC-021	6.99	Interior	Light gray, brittle caulking along interior window frame to brick joints on windows along perimeter of the media center. Materials are weathered and cracking and not painted.	Windows along the perimeter of the media center.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along interior locations. Application of cover material will further isolate materials.

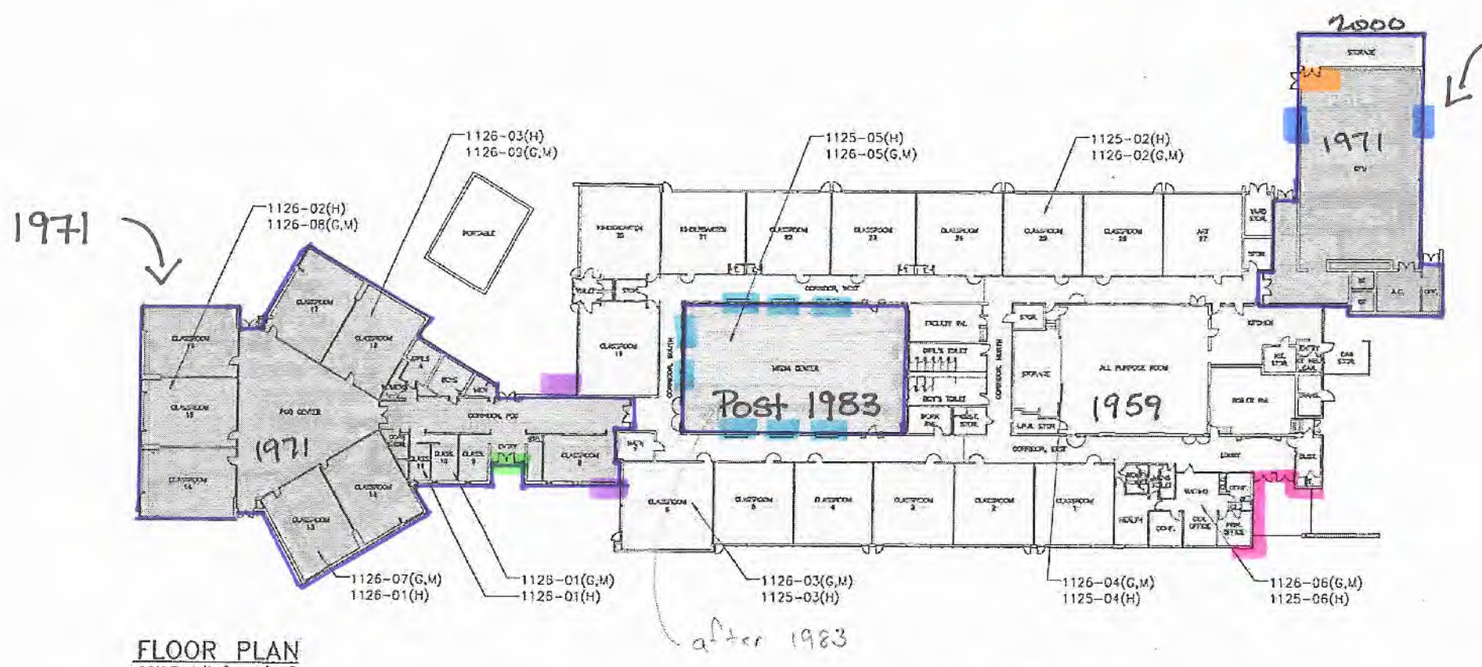
Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

RIVERFIELD ELEMENTARY SCHOOL

Notes:
1. Types of caulking as presented on Table 3

- Type 1 - Interior door frame joints (gymnasium west exit)
- Type 2 - Interior window frame joints (media center)
- Type 3 - Exterior door frame joints
- Type 4 - Brick to brick expansion joints
- Type 5 - Brick to brick expansion joints (gymnasium)
- Type 6 - Brick to overhang joints (1971 main entry)



FLOOR PLAN
SCALE: 1/32" = 1'-0"

HYGENIX AIR SAMPLING LOCATIONS

(H) denotes location of Hydrocarbon Air Samples
(G) denotes location of General Air Monitoring
(M) denotes location of Mold Air Samples

Building Survey – North Stratfield Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the North Stratfield Elementary School on January 31, 2013 and a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 190 Putting Green Road, Fairfield, CT

Initial Construction Date: 1961

Additions/Renovations: 1996 and 2000

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be a combination of double-paned and single-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, and painted aluminum ceiling with overhead ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the North Stratfield Elementary School is presented below.

Construction Date – The initial construction date of the building was 1961; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. There were two building additions, constructed in 1996 and 2000, which fall outside of this timeframe; therefore the subject building area only includes the original building construction.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium ceiling was observed to be painted aluminum with no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January survey, 38 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 72% of the interior samples and 83% of the exterior samples fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be a combination of double-paned and single-paned aluminum framed exterior windows and single-paned aluminum framed interior windows.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building surveys, similar stone tile flooring was observed at North Stratfield Elementary. It is our understanding, based on discussions with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., post 1979) would isolate the underlying material from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).

- A review of the data indicated that 72% of the interior samples and 83% of the exterior samples fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile area described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as “low”, visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as “medium”, application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

<u>Near Term or Best Management Practices</u>

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, two suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures at these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - North Stratfield Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-ME-001	0.1818	Main Entrance	Brick to CMU	Painted
NS-NH-002	0.1727	Nurse Hallway	CMU joint	Hard, Painted
NS-6-012	1.51	Room 6	CMU to vertical beam	Intact, Painted
NS-34-026	5.55	Room 34	CMU to vertical beam/window frame	Gray, Hard, Painted
NS-BE-032	0.0796	Courtyard	Roof overhang	White, Pliable, Intact, Exposed
NS-GYM-034	0.0792	Gym	CMU corner joint	Dark Gray, Pliable, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-16-005	0.3457	Room 16	Door frame to CMU	Gray, Intact, Painted
NS-17-006	0.5254	Room 17	Aluminum door frame to CMU	Gray, Brittle, Intact, Painted
NS-6-013	0.0462	Room 6	Int door frame to CMU	White over grout, Intact, Painted
NS-11-015	0.063	Room 11	Int door frame to CMU	White over Brown, Intact, Painted
NS-15-017	0.0654	Room 15	Int door frame to CMU lintel	White, Intact, Exposed
NS-15-018	0.7579	Room 15	door frame two sealants	Gray, Exposed, Intact
NS-AC-020	0.171	Auditorium/ Cafeteria	Aluminum door frame to CMU	Gray, Pliable, Intact, Exposed
NS-34-025	4.55	Room 34	Int door frame to CMU	Green, Hard, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-20-004	4.58	Room 20	Window frame to CMU	Gray, Hard, Cracking, Painted
NS-LMCH-007	0.1729	LMC hallway	Int. SPA window glass to metal	Brittle, Exposed
NS-23-008	0.0757	Room 23	DPA window frame to wood	Gray over foam, Intact, Exposed
NS-27-009	0.0633	Room 27	Window sill to aluminum	Beige
NS-6-010	0.1027	Room 6	SPA window metal to glass	Gray, Hard, Intact
NS-6-011	0.2234	Room 6	SPA metal to CMU	
NS-11-016	0.1127	Room 11	DPA window frame to sill	Gray, Pliable, Intact, Exposed
NS-AC-021	0.0508	Auditorium/ Cafeteria	SPA window metal to glass	Pliable, Intact, Exposed
NS-AC-022	0.1107	Auditorium/ Cafeteria	SPA window metal to glass	Gray, Very Hard, Intact, Exposed
NS-PLA-023	6.42	Platform	SPA window frame to CMU	Gray, Intact, Exposed
NS-MC-027	0.0988	Library Media Center	DPA window frame to sill	Gray, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 31, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - North Stratfield Elementary School

Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-BE-038	0.1191	Building Exterior	Gym storage door flashing to brick	White, Pliable, Intact, Exposed
NS-BE-029	0.921	Courtyard	DPA frame to steel door frame	Pliable, Intact, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-BE-030	0.0301	Courtyard	DPA frame to sill	Pliable, Intact, Exposed
NS-BE-033	0.1557	Courtyard	Music room window to brick	partly removed Gray, Intact, Pliable, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
NS-BE-035	0.0433	Building Exterior	Vent/AC at office	Pliable, Exposed
NS-BE-032	0.0796	Courtyard	Roof overhang	White, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 31, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

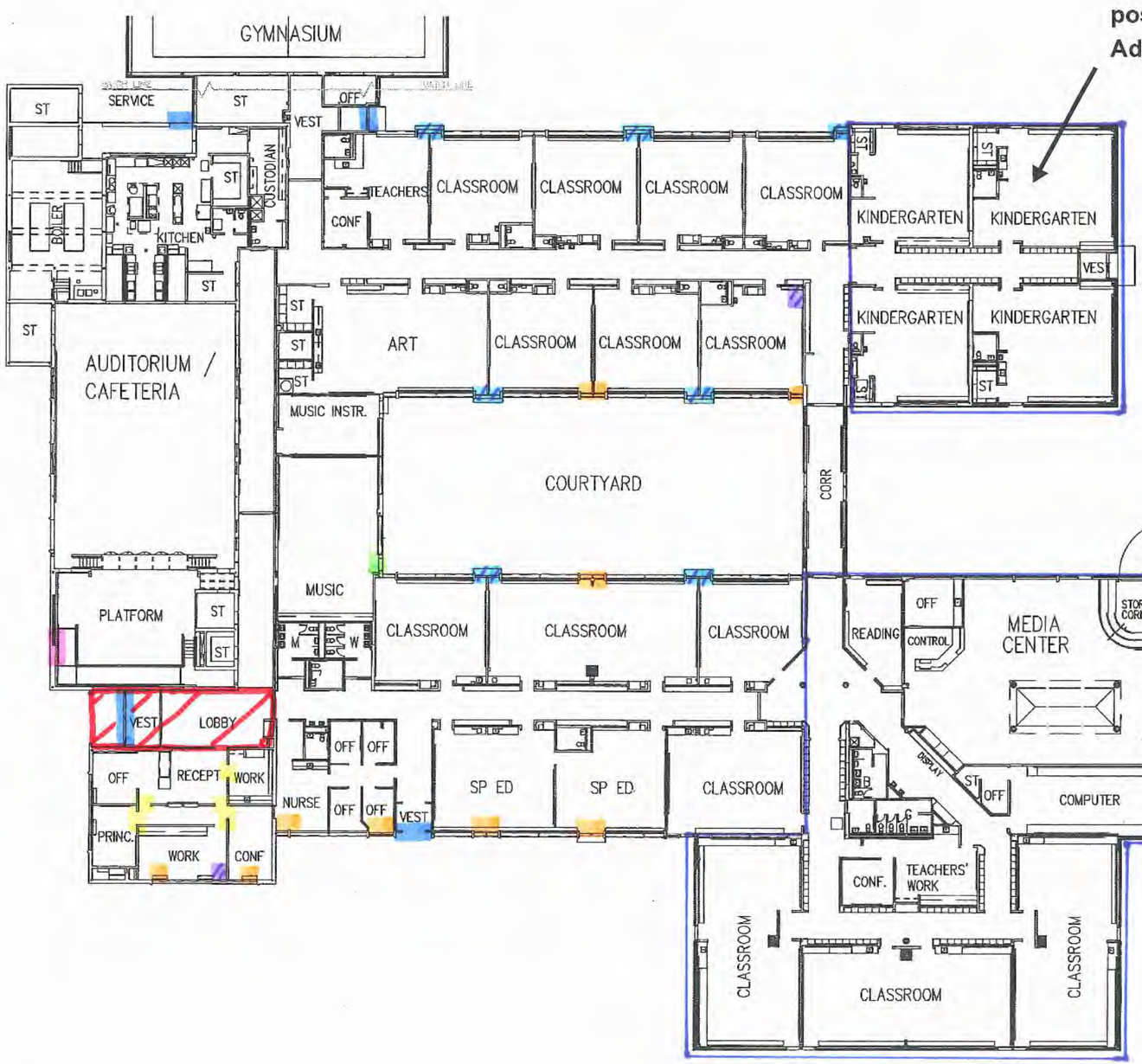
Table 3
Proposed Interim Measures - North Stratfield Elementary School

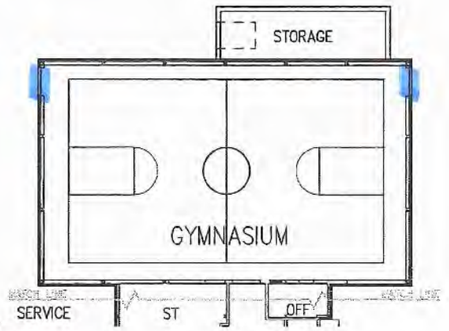
Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 4	NS-6-012 NS-34-026	1.51 and 5.55	Interior	Gray, hard caulking on interior CMU to vertical steel beam joints and window frame joints. Materials are painted.	Two vertical joints, one in south side work room and one in classroom at northeast corner of courtyard.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Doors								
Type 2	NS-17-006	0.53	Interior	Gray, soft, pliable, caulking along interior door to CMU wall joints. Materials are in good physical condition and painted.	Seven classroom doors with the aluminum frames on both interior and exterior sides of door opening.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 3	NS-15-018	0.76	Interior	Gray, soft, pliable, tacky caulking along interior door frame to CMU wall joints in the music room. Materials are in good physical condition with limited cracking observed and painted.	Exterior door from music room to courtyard area.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 5	NS-BE-029	0.92	Exterior	Brown, soft, pliable caulking along exterior door frame joints. Materials are in good physical condition and not painted.	Exterior steel doors.	Medium	Apply new bead of caulking or equivalent material to cover existing caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along exterior locations proximate to playground areas. Application of cover material will further isolate materials.
Type 7	NS-34-025	4.55	Interior	Green, hard caulking along interior door frame to CMU block joints in the office area. Materials are in good physical condition and painted.	Three doors within the office area of the building.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Windows								
Type 1	NS-20-004	4.58	Interior	Gray, hard, caulking on vertical interior window frame to CMU joints. Materials are painted.	Eight windows on western half of south elevation.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along interior joints.
Type 6	NS-PLA-023	6.42	Interior	Gray, soft, tacky caulking along interior window frame to CMU joints of single paned window on the platform area of the auditorium. Materials are in good physical condition and not painted.	One single paned window on the platform area of the auditorium.	Medium	Apply new bead of caulking or equivalent material to cover existing caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along interior locations. Application of cover material will further isolate materials.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Interior hallways as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

NORTH STRATFIELD ELEMENTARY SCHOOL





- Type 1 - Interior window frame joints
- Type 2 - Interior door frame joints
- Type 3 - Interior door frame joint (music room)
- Type 4 - Interior steel beam to CMU and window joints
- Type 5 - Exterior steel door frame joints
- Type 6 - Interior window frame joints (platform area)
- Type 7 - Interior door frame joints (office area)
- Tile Sealer/Finisher

Notes:
1. Types of caulking as presented in Table 3

Building Survey - Osborn Hill Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Osborn Hill Elementary School on January 18, 2013 and a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 760 Stillson, Fairfield, CT

Initial Construction Date: 1958

Additions/Renovations: 1969, 1981, 1997, 2000, and 2009

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with single-paned aluminum framed exterior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, tectum ceiling panels with steel support beams all coated with spray-on fireproofing, and overhead ductwork and in-wall vents leading to the library/adjacent spaces.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Osborn Hill Elementary School is presented below.

Construction Date – The initial construction date of the building was 1958; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. The addition constructed in 1969 also falls within that time period. However, the four building additions, constructed in 1981, 1997, 2000, and 2009, fall outside of this timeframe; therefore the subject building area only includes the original building construction.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs,

these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels and spray-on fireproofing.

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - Samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration in support of planned renovation activities. Osborn Hill Elementary School has undergone extensive PCB testing and remediation to date. From March 2012 to present, numerous samples of suspected PCB source materials and other media (e.g., indoor air) have been collected for laboratory analyses. The results of this testing indicated that PCBs were detected in various materials and media, as summarized below:

- Gymnasium Building Materials
  - Primary source - sample of spray-on fireproofing on ceiling at 30,000 ppm PCBs
  - Potential secondary sources - hardwood floor sealant up to 3,300 ppm; wall paint at 1,500 ppm; and crash-pad foam material up to 350 ppm
- Window caulking and glazing sealants
  - Exterior window caulking samples detected PCBs at concentrations up to 6,900 ppm
  - Exterior and interior window glazing sealants samples detected PCBs at concentrations up to 580 and 710 ppm, respectively
- PCBs were detected in indoor air samples with the highest concentrations detected in the gym and areas immediately surrounding the gym
- Based on the PCB concentrations, several Interim Measures were implemented including, isolation of the gym; encapsulating secondary sources (painted walls and floor sealant) with either paint or tile flooring; and cleaning ductwork
- Post Interim Measure indoor air and surface wipe sampling show levels below acceptance criteria in areas outside of the gymnasium (June 2013).

Based on a review of the available data, the predominant contributor to the PCBs identified in indoor air within Osborn Elementary School appears to be the spray-on fireproofing material that was applied to the ceiling of the gym. PCBs were likely transported from the gym, through the doorway and overhead air ducts, and into adjacent areas (hallways, library). The caulking and sealants are possible contributors to PCBs; however, there were several rooms where indoor air levels were always below acceptable criteria even with window caulking present. It was only after the gym remedial efforts were conducted that the indoor air levels in rooms proximate to the gym (and hallways) decreased.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January survey, 31 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 67% of the interior samples and 90% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well; with single-paned aluminum framed exterior windows. Samples of caulking and glazing sealants from some windows detected PCBs.
- The spray-on fireproofing material at Osborn Hill gymnasium ceiling is assumed to be the primary PCB source material at Osborn Hill.
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). It is our understanding, based on discussion with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As part of previous interim measures conducted at the school, the tile was covered with vinyl flooring to isolate the materials.
- A review of the data indicated that 67% of the interior samples and 90% of the exterior samples screened fell below the chlorine indicator threshold.
- Indoor air samples collected over multiple events indicated that the highest concentrations of PCBs were in the gym and areas immediately surrounding the gym. Following interim measures, indoor air levels have been below acceptance criteria in areas outside the gymnasium.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold, the stone tile areas described above, and known areas with PCBs ≥ 50 ppm based on existing laboratory data and not already addressed by an interim measure.

The determination for a need for additional near term interim measures was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk

- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, one additional area has have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Osborn Hill Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
OH-GYM-007	1.32	Steel Beam	Steel to Concrete Sealant	
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
OH-GYM-008	0.052	Interior Door Caulking	Steel to Concrete Sealant	
OH-GYM-009	1.36	Interior Door Caulking	Steel to Concrete Sealant	
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
OH-M-001	12	Gym Hall Type M Window	Interior Window Glazing Metal to Glass	Black
OH-M-002	0.1251	Gym Hall Type M Window	Interior Window Glazing Metal to Glass	Clear
OH-M-003	0.1099	Gym Hall Type M Window	Interior Window Glazing Metal to Glass	
OH-M-004	0.1184	Gym Hall Type M Window	Interior Window Glazing Metal to Glass	Silver
OH-T5-001	0.0754	Spanish Room Type 5 Window	Interior Window Glazing Metal to Glass	
OH-T5-002	0.0692	Spanish Room Type 5 Window	Interior Window Caulking Metal to Metal	
OH-T5-003	0.0612	Music Room Type 5 Window	Interior Window Glazing Metal to Glass	
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
OH-GYM-001	0.1445	Wood Floor Foam Underlayment	Foam	
OH-GYM-006	0.2	Crash Pad Foam	Foam Padding	
OH-GYM-010	0.0822	Wood Floor	Foam to Concrete Sealant	
OH-GYM-011	1.21	Spray-on Ceiling	Fireproofing Material	Black side
OH-GYM-012	0.6248	Spray-on Ceiling	Fireproofing Material	White Side

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 18, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2

Exterior Chlorine Screening Results - Osborn Hill Elementary School

Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
OH-M-005	0.0345	Gym Hall Type M Window	Exterior Window Glazing Metal to Glass	Silver
OH-M-006	0.0931	Gym Hall Type M Window	Exterior Window Glazing Metal to Glass	Clear
OH-M-007	0.0349	Gym Hall Type M Window	Exterior Window Caulking Metal to Metal	Gray
OH-M-008	0.1103	Gym Hall Type M Window	Exterior Window Glazing Metal to Glass	White
OH-M-009	1.68	Gym Hall Type M Window	Exterior Window Caulking Metal to Metal	Tan, 2 layers
OH-M-010	0.0341	Gym Hall Type M Window	Exterior Window Glazing Metal to Glass	Clear
OH-T5-004	0.1425	Building Exterior	Exterior Window Caulking Metal to Concrete	2 Layers Tan
OH-T5-005	0.0308	Building Exterior	Exterior Window Glazing Metal to Glass	
OH-T5-006	ND	Building Exterior	Exterior Window Glazing Metal to Glass	White
OH-T5-007	0.0314	Building Exterior	Exterior Window Caulking Metal to Metal	White

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 18, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 3
Proposed Interim Measures - Osborn Hill Elementary School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 4	OH-GYM-007	1.32	Interior	Gray, hard, caulking along interior steel beam to CMU wall joints. Materials are in good physical condition and painted.	3 joints in the gymnasium.	Low	No action proposed based on location within the gymnasium.	Materials to be remediated as part of upcoming gymnasium PCB remediation activities.
Doors								
Type 1	OH-GYM-009	1.36	Interior	White, soft, pliable caulking along interior door frame to CMU block wall joints. Materials are in good physical condition and painted gray.	Two interior doors along east side of gymnasium leading into the storage room and garage area.	Low	No action proposed based on location within the gymnasium.	Materials to be remediated as part of upcoming gymnasium PCB remediation activities.
Windows								
Type 2	OH-M-001	12	Interior	Black, soft, tacky glazing sealants along interior glass to metal frame joints. Materials are in good physical condition and not painted.	1 window in hallway leading to gymnasium. Other sealants present on windows but did not exceed chlorine threshold.	Medium	Apply new bead of caulking or similar material over existing joints. Conduct periodic visual inspections to check for damage or deterioration of installed coating.	Narrow bead of calking along interior location. Application of new coating will further isolate the materials. Window glazing sealants from hallway window detected PCBs ≥ 50 ppm.
Type 3	OH-M-009	1.68	Exterior	Tan, pliable caulking on exterior window frame to brick jonts. Materials are in good physical condition and coated with gray caulking.	1 window in hallway leading to gymnasium. Other sealants present on windows but did not exceed chlorine threshold.	Low	Conduct periodic visual inspection of existing gray caulking to check for damage or deterioration. Reapply as needed.	Narrow bead of coated caulking along exterior locations.
Other								
Tile Sealer/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in selecte areas of the building. Coating and tile are located underneath vinyl tile flooring.	Interior hallway as depicted.	Low	Conduct periodic visual inspection of vinyl flooring. On-going evaluation of corrective measures.	Materials isolated from direct contact by vinyl flooring.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

OSBORN HILL ELEMENTARY SCHOOL

Notes:

1. Types of caulking as presented on Table 3.

Type 1 - Interior door frame joints (gymnasium)
Type 2 - Interior glazing sealants
Type 3 - Exterior window frame joints
Type 4 - Interior steel beam to CMU wall joints (gymnasium)

Building Survey - Mill Hill Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Mill Hill Elementary School on January 24, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 635 Mill Hill Terrace, Fairfield, CT

Initial Construction Date: 1955

Additions/Renovations: 1978, 1991, 2000

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with single and double-paned aluminum framed exterior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, sealed CMU walls with vertical steel support beams, and tectum ceiling panels/painted steel beam supports with overhead ductwork and vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Mill Hill Elementary School is presented below.

Construction Date – The initial construction date of the building was 1955; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. The building addition constructed in 1978 also falls within this timeframe. There were additions constructed in 1991 and 2000, which fall outside of this timeframe; therefore the subject building area only includes the original building construction and the portion constructed in 1978.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior.

Photos of typical building sealants observed during the building survey are provided below.






Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January survey, 24 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 88% of the interior samples and 67% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building; with single and double-paned aluminum framed exterior windows.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building surveys, similar stone tile flooring was observed at Mill Hill Elementary. It is our understanding, based on discussions with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., post 1979) would isolate the underlying material from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).
- A review of the data indicated that 88% of the interior samples and 67% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile area described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, two suspect interior materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measure at these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1

Interior Chlorine Screening Results - Mill Hill Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-GH-007	0.1641	Gym Hall	CMU to CMU	
MH-PR-010	0.5792	Principal's Office	Brick to brick	Gray
MH-25-013	0.0049	Room 25	CMU to metal beam	Pliable, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-21-003	0.1046	Room 21	Metal door frame	White
MH-GH-004	0.146	Gym Hall	Metal door frame to CMU	Brittle, Painted
MH-GH-005	0.2069	Gym Hall	Metal door window to frame	Pliable, Intact, Exposed
MH-GYM-006	0.0757	Gym	Metal door frame to CMU	Painted
MH-GH-008	0.7135	Gym Hall	Metal door metal to glass	Clear sealant
MH-MR-009	0.09	Men's Room	Metal door frame to CMU/brick	Painted
MH-ME-014	0.0645	Media Center	Metal door frame to CMU	Painted
MH-ME-015	0.1612	Main Entrance	Black metal door to glass	Intact, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-21-001	0.0893	Room 21	Window frame to CMU	Weathered, Painted
MH-21-002	0.0938	Room 21	Window frame to sill	Weathered
MH-PR-011	0.0757	Principal's Office	DPA window metal to metal/sill	Gray
MH-25-012	0.2907	Room 25	Window metal to metal	Gray, Intact, Exposed
MH-AP-016	0.1252	All Purpose Room	Windows; vertical	Gray Intact
MH-AP-017	0.0952	All Purpose Room	Windows; vertical	Clear Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 24, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shade indicates above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - Mill Hill Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-BE-022	0.056	Building Exterior	Brick to brick	Gray over foam
MH-BE-024	0.2217	Building Exterior	Entry overhang	Gray
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-BE-019	0.2473	Building Exterior	Classroom doors; metal to panel	Over foam
MH-BE-020	0.5671	Building Exterior	Gym door	multiple layers
MH-BE-023	0.1654	Building Exterior	Door	thin gray coat over mortar
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
MH-BE-021	0.7536	Building Exterior	SPA window	two layers; Dark Gray, Light Gray

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 24, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shade indicates above chlorine indicator threshold

Table 3
Proposed Interim Measures - Mill Hill Elementary School

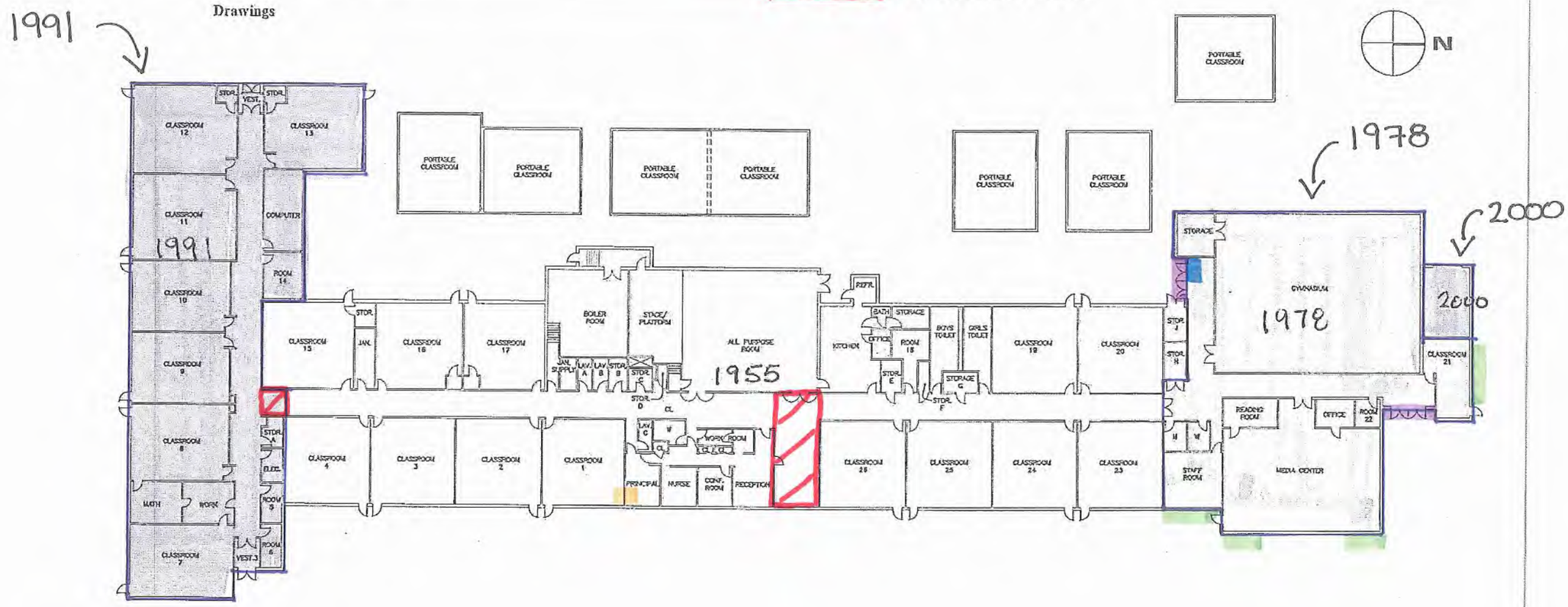
Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 1	MH-PR-010	0.58	Interior	Gray, pliable caulking along interior brick to brick expansion joint in the principal's office. Caulking is cracking and not painted.	South wall of principal's office.	Medium	Apply new bead of caulking or equivalent material to cover existing caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along interior locations. Application of cover material will further isolate materials.
Doors								
Type 2	MH-GW-008	0.71	Interior	Clear, pliable glazing sealants along interior glass to door frame joint (gray residue observed). Materials are not painted.	Located on one hallway door to the south of the gymnasium.	Medium	Apply new bead of caulking or equivalent material to cover existing sealant. Conduct periodic visual inspection to check for damage or deterioration of installed material.	Narrow bead of uncoated sealant along interior location. Application of cover material will further isolate materials.
Type 4	MH-BE-020	0.57	Exterior	Gray, pliable caulking along exterior metal door frame to brick wall joints. Materials are in good physical condition and coated with a second layer of caulking.	Located on main entry doorways on the portion of the building constructed in 1978.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating and to confirm use of surrounding areas. Reapply as need to maintain existing coating.	Narrow bead of hard coated caulking along exterior joints away from areas frequented by staff and students.
Windows								
Type 3	MH-BE-021	0.75	Exterior	Light gray, pliable caulking along exterior window frame to brick joints. Darker gray caulking observed beneath outer layer. Materials are in good physical condition and not painted.	Exterior windows on the portion of the building constructed in 1978.	Low	Conduct periodic visual inspection to check for damage or deterioration and to confirm use of surrounding areas.	Narrow bead of caulking along exterior locations away from areas frequented by staff and students.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Interior hallways as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

MILL HILL ELEMENTARY SCHOOL

Type 1 - Interior brick to brick vertical joint (principal's office)
Type 2 - Interior glazing sealant (glass to door frame joints)
Type 3 - Exterior window frame joints (1978 portion)
Type 4 - Exterior door frame joints (1978 portion)
Tile Sealer/Finisher



FLOOR PLAN
SCALE: 1/32" = 1'-0"

Notes:
1. Types of caulking as presented on Table 3

Building Survey - Holland Hill Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Holland Hill Elementary School on January 28, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 105 Meadowcroft Road, Fairfield, CT

Initial Construction Date: 1956

Additions/Renovations: 1978 and 2001

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, tectum ceiling panels with painted steel support beams, and overhead ductwork and vents.

Screening Assessment

There were several key parameters evaluated as part of the screening assessment. A summary of these parameters in the context of the Holland Hill School is presented below.

Construction Date – The initial construction date of the building was 1956; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. A building addition was added in 1978 which also falls within this timeframe. The addition of

the storage room was conducted in 2005; therefore, the subject building area only includes the original 1956 and 1978 building construction.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey, various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January 2013 survey, 28 samples of various sealants, caulking, and other

materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 100% of the interior samples and 83% of the exterior samples fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Window construction was consistent throughout the building with double paned replacement windows and single paned windows. According to School District Records, the double paned exterior windows were installed post-1980 after the ban on PCBs in building materials.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was <u>not</u> observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building survey, similar stone tile flooring was observed at Holland Hill Elementary School. It is our understanding, based on discussions with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., past 1979) would further isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).
- A review of the screening results indicated that 100% of the interior samples and 83% of the exterior samples fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim

measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tiles areas described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces

- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, two suspect exterior materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measure at these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Holland Hill Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-GH-007	0.0415	Gym Hall	CMU to CMU joint	Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-GYM-002	0.0954	Gym	Steel door frame to CMU	White, Painted
HH-GYM-003	0.0533	Gym	Steel door frame to CMU	Light Gray, Exposed
HH-GYM-004	0.2337	Gym	Steel door frame to CMU	Dark Gray, Exposed
HH-GH-006	0.163	Gym Hall	Door window to frame	Dark Gray, Intact, Exposed
HH-GH-008	0.0979	Gym Hall	Second door metal to glass replacement	Intact, some Exposed
HH-K1-009	0.1135	Room K1	Door	Exposed
HH-LMC-010	0.068	Library Media Center	Int door frame to CMU	White, Intact, Painted
HH-LH-015	0.0984	Kitchen	Metal door frame to CMU	2 layers White, Intact, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-12-001	0.1547	Room 12	Window metal to metal	Gray, Intact, Exposed
HH-20-005	0.4339	Room 20	Window frame to CMU	Gray, Intact, Exposed
HH-CAF-012	0.0834	Cafeteria/Stage	DPA window frame to CMU	Gray, Intact, Exposed
HH-KIT-013	0.1383	Kitchen	Window metal to glass	Clear, Intact, Exposed
HH-KIT-014	0.0241	Kitchen	Window metal to glass	Gray, Brittle, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-LMC-011	0.2414	Library Media Center	Top of shelf to CMU	White, Weathered
HH-LH-016	0.0789	Library Hall	Grease on beam joint	

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 28, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening results above the chlorine indicator threshold.

Table 2
Exterior Chlorine Screening Results - Holland Hill Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-BE-024	2.79	Building Exterior	Brick to brick	Brown, Weathered
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-BE-020	0.3017	Building Exterior	Steel door single pane window wood to brick	Brown
HH-BE-021	0.4623	Building Exterior	Room K1 door wood to brick	Brittle, Painted
HH-BE-025	8.83	Building Exterior	Library Hall door	Brown over gray, Intact, Partially Exposed
HH-BE-028	0.3953	Building Exterior	Boiler room door metal to brick	Intact, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
HH-BE-017	0.0765	Building Exterior	SPA window frame to brick at office	Gray, Intact, Exposed
HH-BE-018	0.0963	Building Exterior	SPA window frame to brick at office	Clear
HH-BE-019	0.2682	Building Exterior	DPA window metal to brick/metal	Gray
HH-BE-022	0.332	Building Exterior	Room K1 bathroom window metal to brick	White, Brittle, Weathered
HH-BE-023	0.182	Building Exterior	Room K1 bathroom window metal to glass	Gray, Weathered
HH-BE-026	0.08	Building Exterior	Kitchen single pane, metal to metal	Gray, Weathered
HH-BE-027	0.0501	Building Exterior	Kitchen single pane, metal to brick	Intact

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 28, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening results above the chlorine indicator threshold.

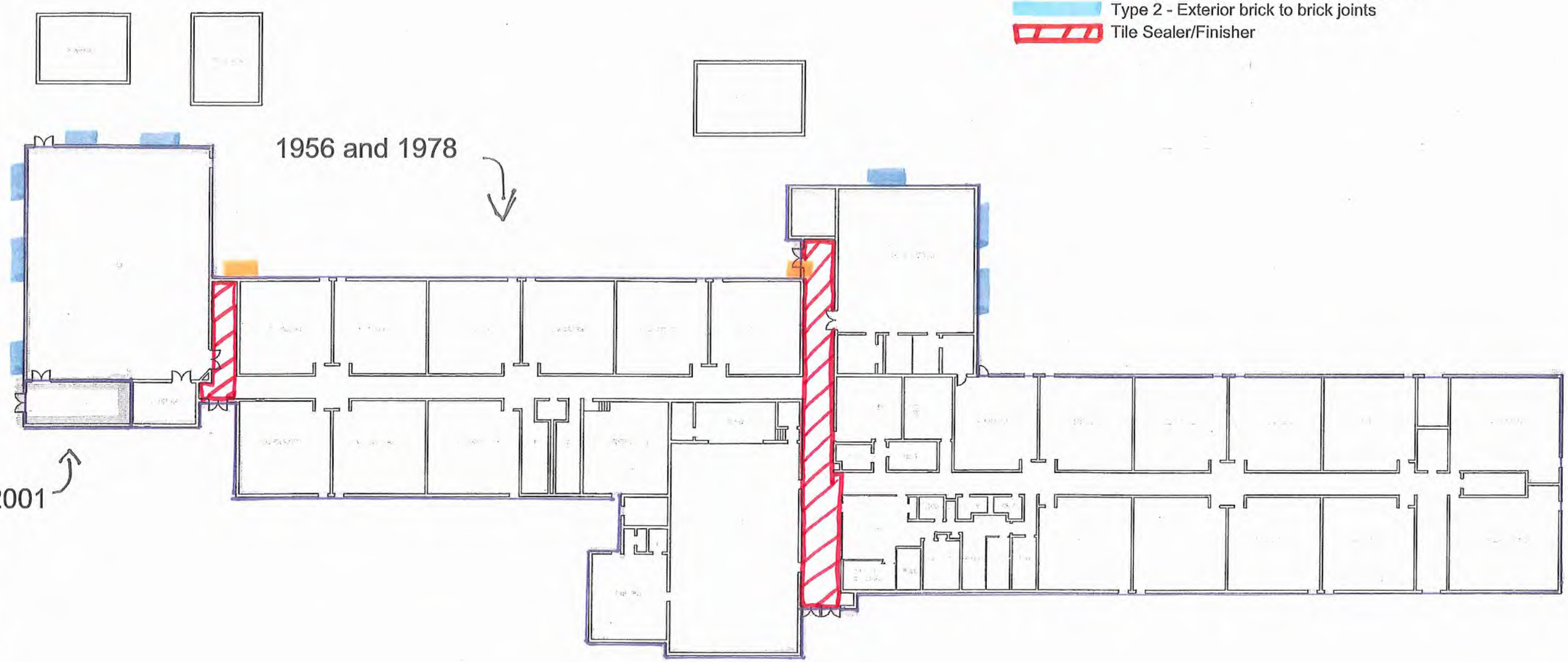
Table 3
Proposed Interim Measures - Holland Hill Elementary School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 2	HH-BE-024	2.79	Exterior	Brown, pliable caulking along exterior brick to brick vertical joints. Materials are in good physical condition and not painted.	8 vertical joints on library and gymnasium exterior walls.	Medium	Apply new bead of caulking or equivalent material to cover existing caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of hard caulking along exterior masonry joints; however, caulking located in areas used as playgrounds. Application of cover material will further isolate materials.
Doors								
Type 1	HH-BE-025	8.83	Exterior	Gray, soft, caulking along two exterior door frame to brick wall joints. Materials are in good physical condition with limited cracking observed and coated with brown skim coat.	Two exterior doors on north elevation.	Low	Conduct periodic visual inspection to check for damage or deterioration to existing skim coating. Reapply skim coat as needed.	Narrow bead of coated caulking along exterior door joints.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Main entrance hallway and hallway adjacent to gymnasium	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coating applied annually as part of standard building maintenance to be used as interim measure.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

HOLLAND HILL ELEMENTARY SCHOOL



Existing Floor Plan

1/32" = 1'-0"

Existing information obtained from plans prepared by others

Room names not verified

Notes:

1. Type of caulking/material as presented on Table 3.

REVISED:

SCALE:

DATE:

DRAWN:

26-21

A-2

Building Survey – Stratfield Elementary School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Stratfield Elementary School on January 23, 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 1407 Melville Avenue

Initial Construction Date: 1929

Additions/Renovations: 1947, 1972, 2010, 2011

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU/brick walls (some with a plaster coating), and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, and tectum ceiling panels in a drop ceiling with overhead ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Stratfield Elementary School is presented below.

Construction Date – The initial construction date of the building was 1929; therefore it was built prior to the timeframe of when PCBs were sometimes used in standard construction materials. However, it has been assumed that maintenance and upkeep was performed during the life of the building including within the timeframe. Two building additions, constructed in 1947 and 1972, fall inside of the PCB

timeframe. The addition constructed in 2010/2011 falls outside of this timeframe; therefore the subject building area only includes the original building and those additions through 1972.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray, brown, and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium).

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - Samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration as part of an exterior door replacement project. The results are as follows:

- Exterior door caulking samples (<0.82, 1.2, 10, 130, and 58,000 ppm PCBs); concrete expansion joints (<0.83, 0.93, and 19 ppm PCBs); miscellaneous sealants (<0.81, 1, and 5.2 ppm PCBs).

Two of these samples had concentrations that exceed the 50 ppm Federal regulatory threshold for PCB Bulk Product Waste and as such, those materials will be managed accordingly during planned renovation activities.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the January 2013 survey, 20 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that all of the interior and exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows. According to School District Records, the double paned exterior windows were installed post-1980 after the ban on PCBs in building materials.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.***
- The stone tile flooring, reportedly to contain PCBs in the floor sealant at Osborn Hill, was **not** observed at Stratfield Elementary.
- Analytical results indicated that PCBs ≥ 50 ppm were present in some lower level exterior door caulking within the portion of the building constructed in 1972.

- A review of the data indicated that all of the interior and exterior samples screened fell below the chlorine indicator threshold (screening of exterior door caulking within the 1972 portion of the building was not conducted based on the previous analytical data which indicated PCBs ≥ 50 ppm were present).

Follow-up Survey

A follow-up survey of exterior door caulking materials identified as containing ≥ 50 ppm PCBs was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and included exterior door caulking within the portions of the building constructed through 1972.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, no suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Stratfield Elementary School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
SE-LMC-013	0.2412	Library Media Center	Stairwell metal to brick wall	Cracking, Exposed
Door Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
SE-KH-001	0.089	Room 204 Hallway	Courtyard door metal frame	Black, Intact
SE-RA-002	0.0578	3rd hallway 300-301	Roof access metal door frame to CMU	Painted
SE-RA-003	0.4295	3rd hallway 300-301	Roof access metal door frame to CMU	Exposed
SE-RA-004	0.0584	3rd hallway 300-301	Above door lintel: metal to CMU	
SE-200MED-006	0.0734	Across from 200m	Exit door metal frame to CMU	Gray, brittle
SE-200MED-007	0.3109	Across from 200m	Exit door glass to metal	Gray/green
SE-103-010	0.0648	Room 103	Metal door frame to brick	White
SE-LMC-011	0.0635	Library Media Center	Metal door to concrete	
SE-LMC-012	0.1256	Library Media Center	Metal door to glass	Brown putty
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
SE-200M-005	0.1878	200m	Metal window frame to CMU	Black
SE-LMC-014	0.1633	Library Media Center	Stairwell windows	Light gray
SE-CK-017	0.186	Kitchen	Windows	White
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
SE-GYM-008	0.1157	Gym stage	Pipe to wall	Red
SE-GYM-009	0.0602	Gym stage	Pipe to wall	Yellow
SE-BR-015	0.0473	Boiler Room	Pipe to wall in crawlspace	Red
SE-300A-016	0.0261	Room 300A	Pipe	

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 23, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame

Table 2
Exterior Chlorine Screening Results - Stratfield Elementary School

Sample ID	Chlorine Screening by XRF[1]	Location	Materials	Description
Door Caulking Screening Results				
SE-BE-018	0.106	Building Exterior	Door frame joint	Not Noted
Window Caulking Screening Results				
SE-BE-019	0	Building Exterior	Window Frame joint	Not Noted
SE-BE-020	0.0898	Building Exterior	Window Frame joint	Not Noted

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on January 23, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame

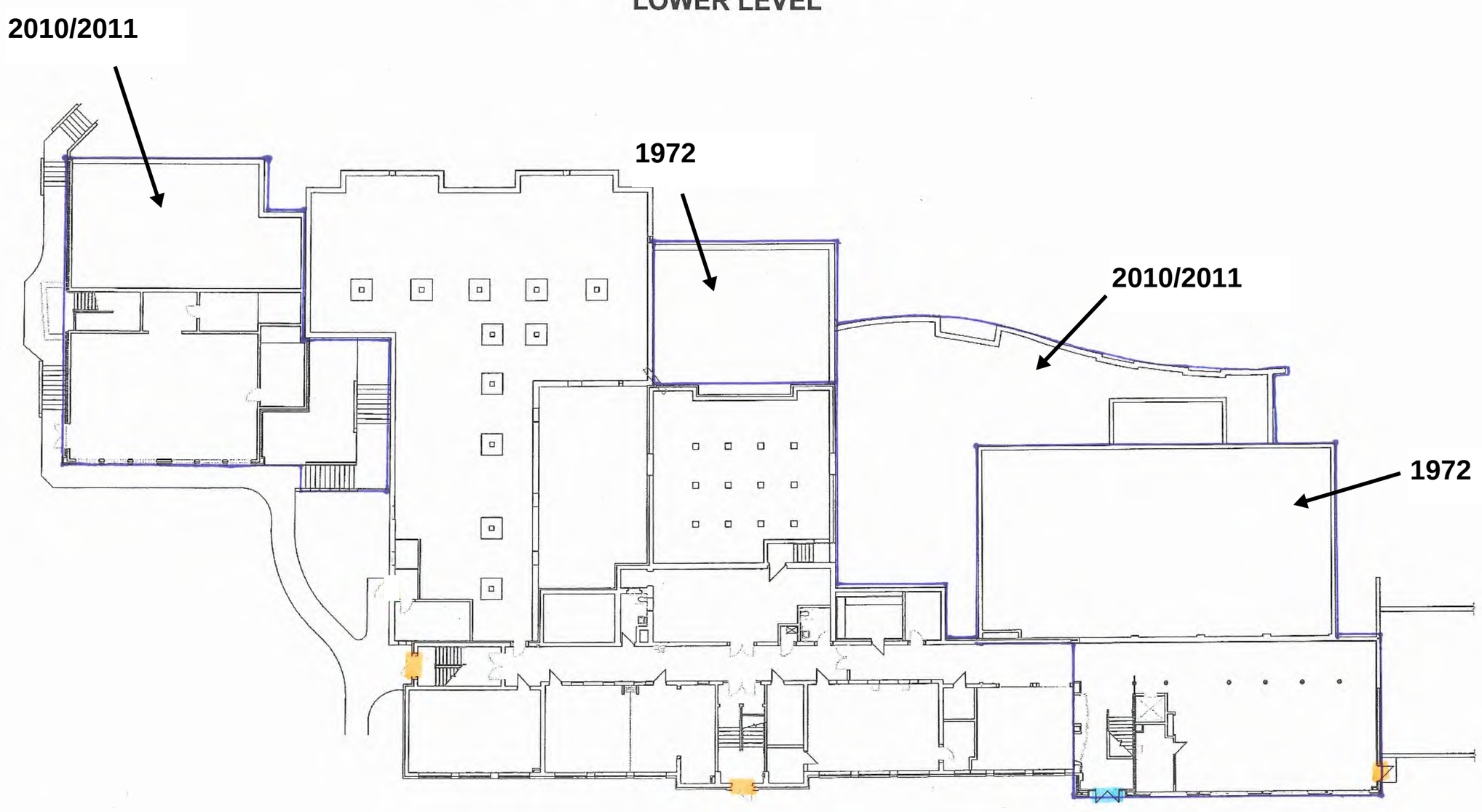
Table 3
Proposed Interim Measures - Stratfield Elementary School

Type [(1)]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Doors								
Type 1	N/A	N/A	Exterior	Gray, pliable caulking along exterior door frame to masonry joints. Materials are weathered and painted (up to 58,000 ppm PCBs detected in previous samples).	Five exterior doors in the portions of the building constructed through 1972.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along exterior joints.
Type 2	N/A	N/A	Exterior	White, pliable, tacky caulking along exterior door frame to concrete joints. Materials are in good physical condition and painted (130 ppm PCBs detected in previous samples).	One exterior door in the portion of the building constructed in 1972.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as need to maintain existing coating.	Narrow bead of coated caulking along exterior joints.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

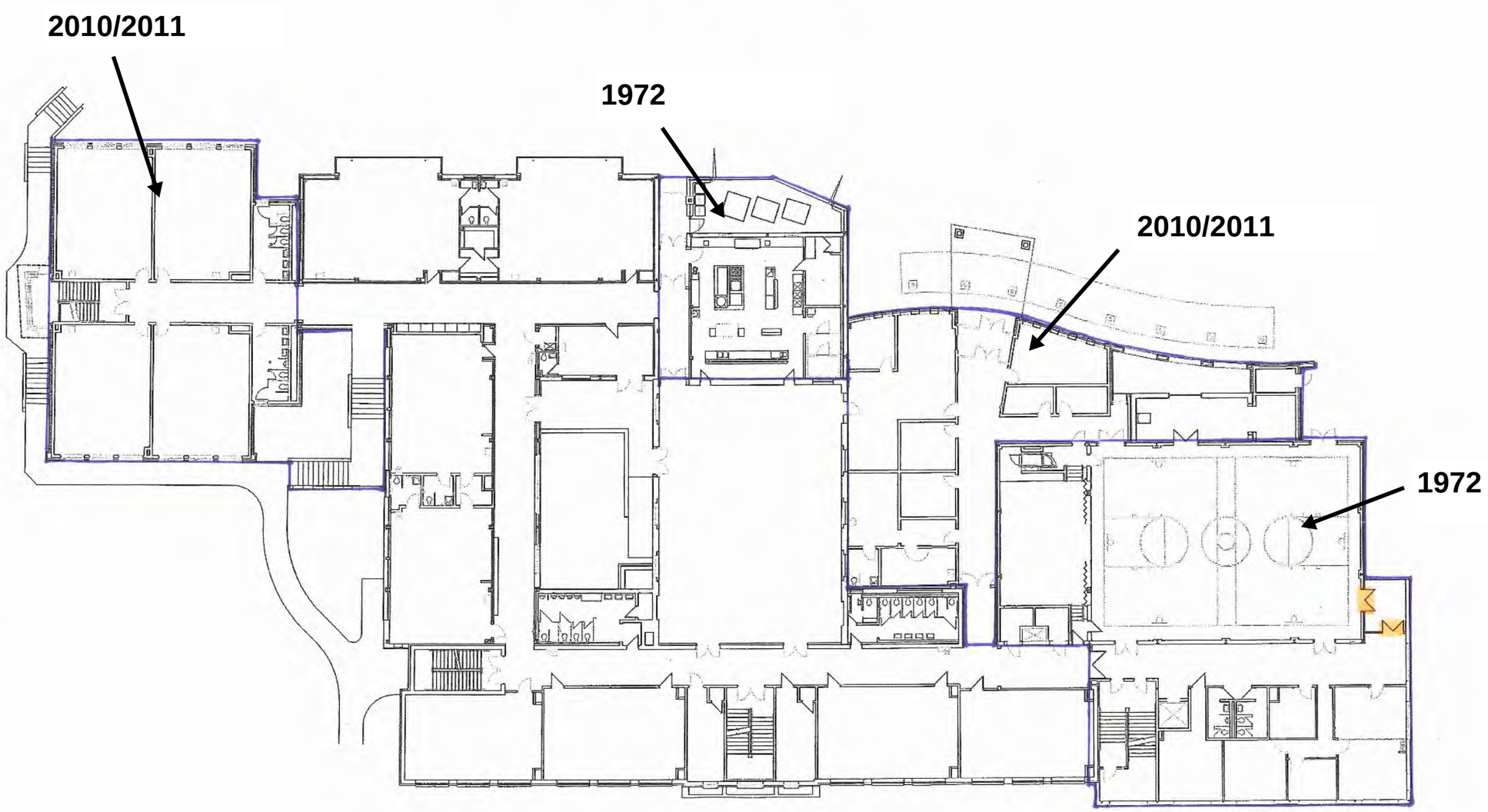
STRATFIELD ELEMENTARY SCHOOL
LOWER LEVEL



Type 1 - Exterior door frame to masonry joints.
Type 2 - Exterior door frame to concrete joints (1972 portion)

Notes:
1. Types of caulking as presented on Table 3

STRATFIELD ELEMENTARY SCHOOL
MAIN LEVEL



Notes:
1. Types of caulking as presented on Table 3

Type 1 - Exterior door frame to masonry joints

MIDDLE SCHOOLS

Building Survey – Tomlinson Middle School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Tomlinson Middle School on February 13, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 200 Unquowa Road, Fairfield, CT

Initial Construction Date: 1917

Additions/Renovations: 1942, 1958, 1976, 2006

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel and wood structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU/drywall/plaster walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows (multiple types) and single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The building has two gymnasiums. The primary gymnasium was observed to have sealed wood floors, painted CMU walls with vertical steel support beams, tectum ceiling panels with painted steel supports, and overhead ductwork and in-ceiling vents. The auxiliary gymnasium was observed to have sealed wood floors, painted CMU/brick/plaster walls with vertical steel support beams, a painted wood and steel beam ceiling, and overhead ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Tomlinson Middle School is presented below.

Construction Date – The initial construction date of the building was 1917; therefore it was built prior the timeframe of when PCBs were sometimes used in standard construction materials; however, it is assumed to have been maintained and in use throughout the timeframe. Also, additions were added in 1942, 1958, and 1976 which fall within the timeframe. There was a large addition, constructed in 2006, and this falls outside of this timeframe; therefore the subject building area only includes the original building construction and additions through 1976.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior. The gymnasium was observed to have tectum ceiling panels, but no spray-on fireproofing (e.g., not the same material as observed at the Osborn Hill gymnasium). A spray-on material was identified on the ceiling of the boiler room, but was not visually similar to the material observed at Osborn Hill and was reportedly installed during a renovation project conducted in the 2000s.

Photos of typical building sealants observed during the building survey are provided below.

Existing Data - Existing samples of suspect materials were collected from the building exterior in association with a 2012 exterior door replacement project, and have been analyzed by a laboratory to determine PCB presence and concentration. PCBs were detected in at least one sample; however, no samples were identified at ≥ 50 ppm in the eleven samples of exterior and interior door caulking (8 reported < 1 ppm, 1 sample at 1.4 ppm, and 2 samples at < 37 ppm PCBs).

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February survey, 22 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 80% of the interior samples and 60% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Numerous types of window systems and window styles were present at the school and even within rooms of buildings. Numerous windows appear to have been updated over time and repair projects (replacement sealants) are evident in some areas.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was not observed at the school.*** Spray on ceiling coatings were observed in one boiler room (of note, this material was reportedly installed during a renovation project conducted in the 2000s).
- The stone tile flooring, reportedly to contain PCBs in the floor sealant at Osborn Hill, was **not** observed at Tomlinson Middle School.
- A review of the chlorine screening data indicated that 80% of the interior samples and 60% of the exterior samples screened fell below the chlorine indicator threshold.

- Analytical testing results indicated that PCBs were not present at concentrations ≥ 50 ppm in the materials tested as part of the 2012 exterior door replacement project.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

<u>Near Term or Best Management Practices</u>

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, one material has been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Tomlinson Middle School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-344-005	0.0659	Room 344	Drywall to plaster seam	White, Intact, Painted
TS-LMCH-007	0.113	LMC Hallway	CMU wall joint	Intact, Painted
TS-247-009	0.0908	Room 247 Aux Gym	Brick to CMU	Brittle, Painted
TS-282-011	0.3653	Room 282	Brick to drywall	White, Pliable, Intact, Exposed
TS-BE-017	0.0975	Gym	CMU wall to support beam	Hard, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-316-002	0.0307	Room 316	Steel door frame to CMU	Intact, Pliable, Painted
TS-AUD-012	0.3935	Auditorium/Stage	Doorframe to upper wood lintel	Gray, Pliable, Intact, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-316-001	0.1895	Room 316	T2 window glass to frame	Black, Pliable, Intact, Exposed
TS-LMCH-006	0.2211	LMC Hallway	T2 Interior windows	Intact, Exposed
TS-247-008	0.3742	Room 247 Aux Gym	T2 window frame to brick	Black, Pliable, Intact, Exposed
TS-216-010	0.6716	Room 216	T2 Window frame to brick	Black, Pliable, Intact, Exposed
TS-ST4-013	3.94	Stairwell #4	Steel frame window to CMU	Pliable, Intact, Painted
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-351-003	0.082	Room 351	Pipe through floor	Red, Intact, Exposed
TS-344-004	0.0342	Room 344	Radiator to plaster	White, Intact, Exposed
TS-R103H-14	0.0998	Room 103 Hallway	Drywall to locker	White, Pliable, Intact, Exposed
TS-BAND-015	0.0779	Band Room	Fiberboard wall panel	Intact, Exposed
TS-BE-016	0.075	Room 170 Boiler Room	Ceiling Spray Insulation	Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 13, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

Table 2
Exterior Chlorine Screening Results - Tomlinson Middle School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-BE-018	2.07	Building Exterior	Brick building seam	Black, Pliable, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-BE-019	0.115	Building Exterior	Gym Entrance steel to steel	Pliable, Intact, Painted
TS-BE-020	0.9379	Building Exterior	Gym Entrance steel to brick	Pliable, Intact, Painted
TS-BE-022	0.142	Building Exterior	Entrance wood to brick	Weathered, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
TS-BE-021	0.0109	Building Exterior	T2 exterior window frame to brick	Gray, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 13, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above chlorine indicator threshold

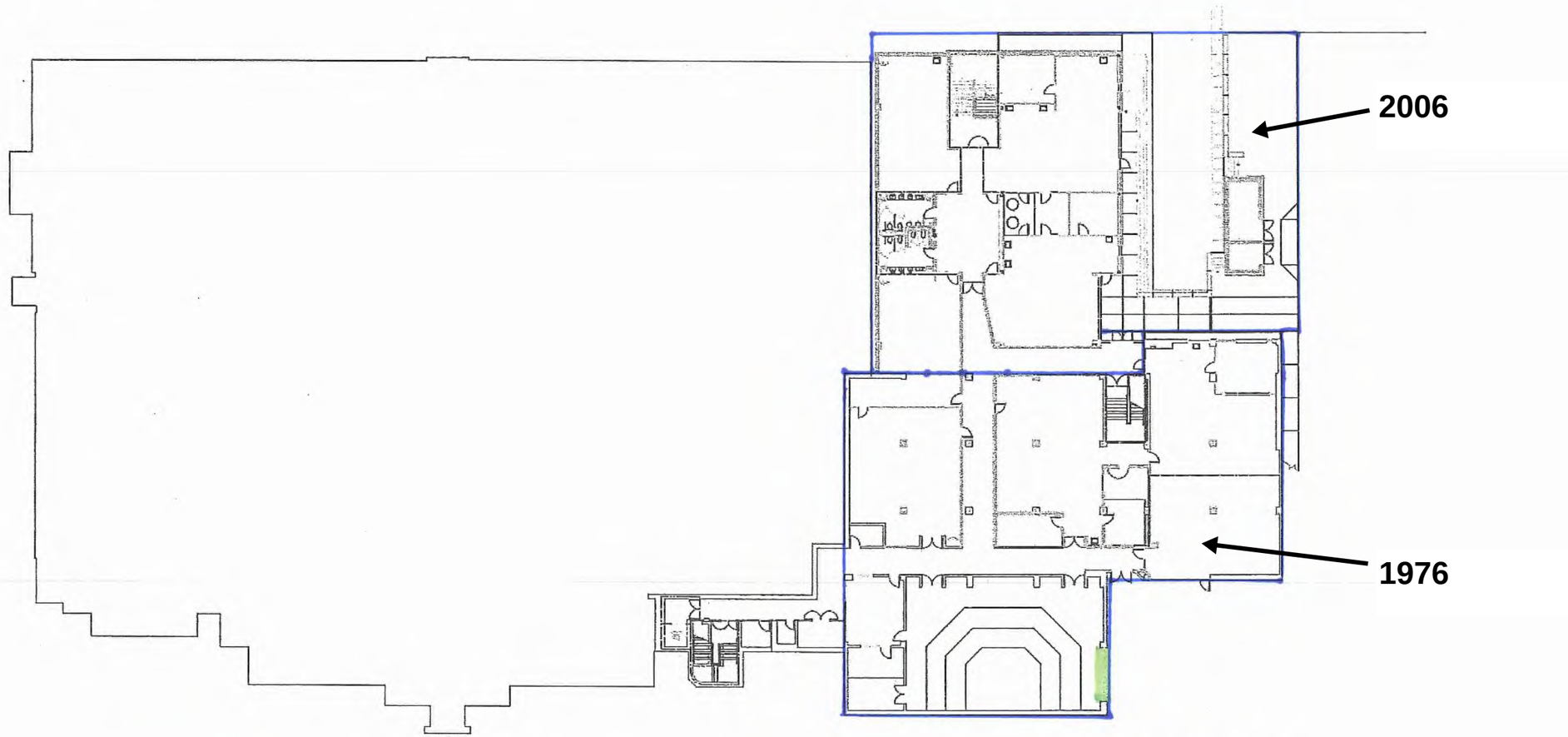
Table 3
Proposed Interim Measures - Tomlinson Middle School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 3	TS-BE-018 TS-BE-020	0.94 and 2.07	Exterior	Brown, pliable caulking along exterior brick to brick joints (2 locations are exterior brick to door joints). Materials are in good physical condition and not painted.	Exterior joints along gymnasium walls and doors.	Low	Conduct periodic visual inspection of existing caulking to check for damage or deterioration and to confirm use of surrounding areas.	Narrow beads of caulking at exterior locations not frequented by staff or students.
Windows								
Type 1	TS-247-008 TS-216-010	0.37 and 0.67	Interior	Black, pliable, caulking along interior window to brick wall joints on interior side of three 2nd floor windows (arched windows). Materials are in good condition and not painted.	2nd Floor interior space	Medium	Apply bead of caulking or similar coating over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of applied caulking.	Narrow beads of caulking at interior locations. Application of new coating will further isolate the materials.
Type 2	TS-ST4-013	3.94	Interior	Brown, pliable caulking along interior side of 1st floor window in Stairwell #4. Materials are in good physical condition and painted white.	1st Floor window of Stairwell #4	Low	Conduct periodic visual inspection of existing coating to check for damage or deterioration. Reapply as needed to maintain exsisting coating	Narrow beads of coated caulking at interior location.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

TOMLINSON MIDDLE SCHOOL

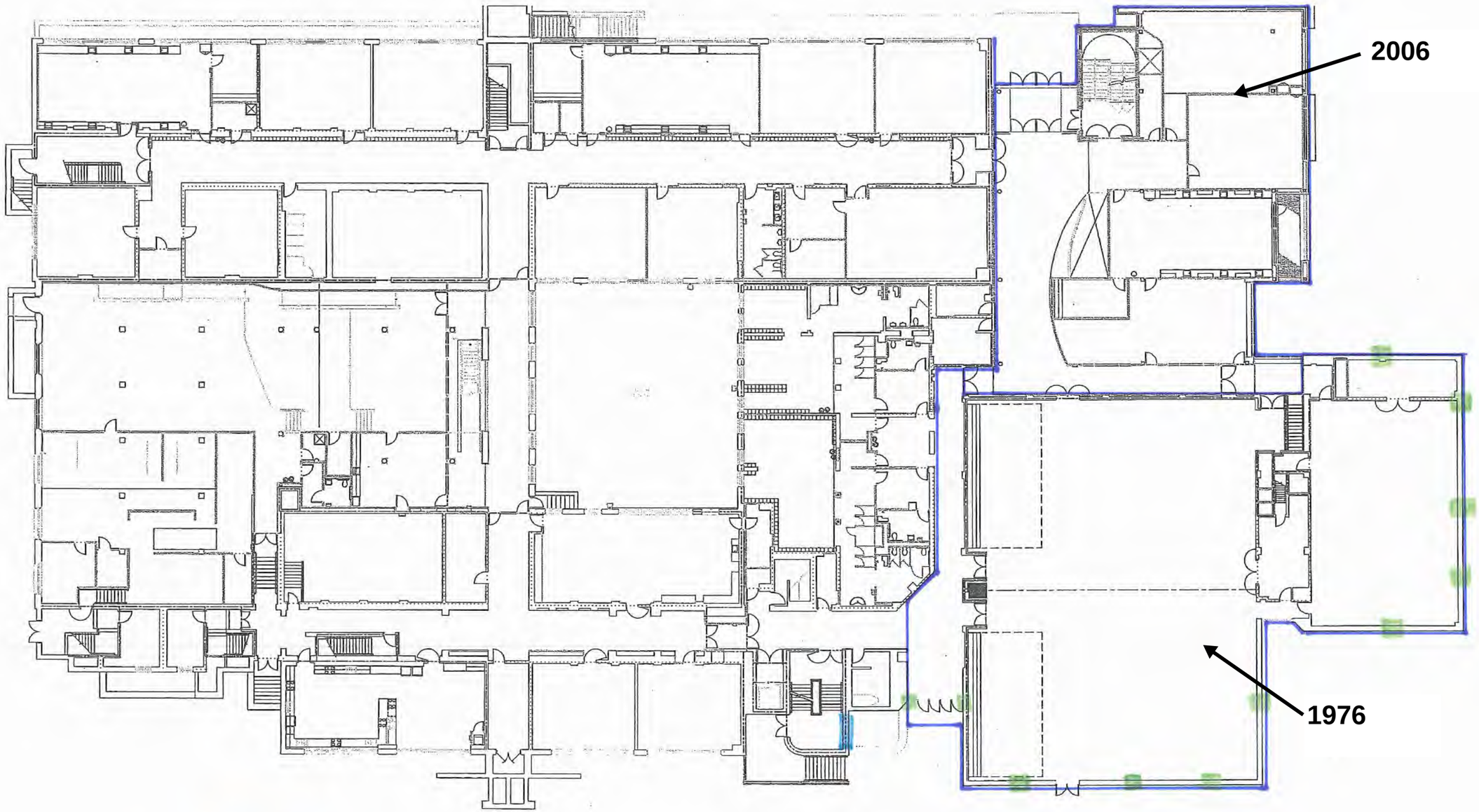


BASEMENT PLAN

Type 3 - Exterior brick to brick wall joints and brick to door frame joints (gymnasium)

Notes:
1. Types of caulking as presented in Table 3.

TOMLINSON MIDDLE SCHOOL

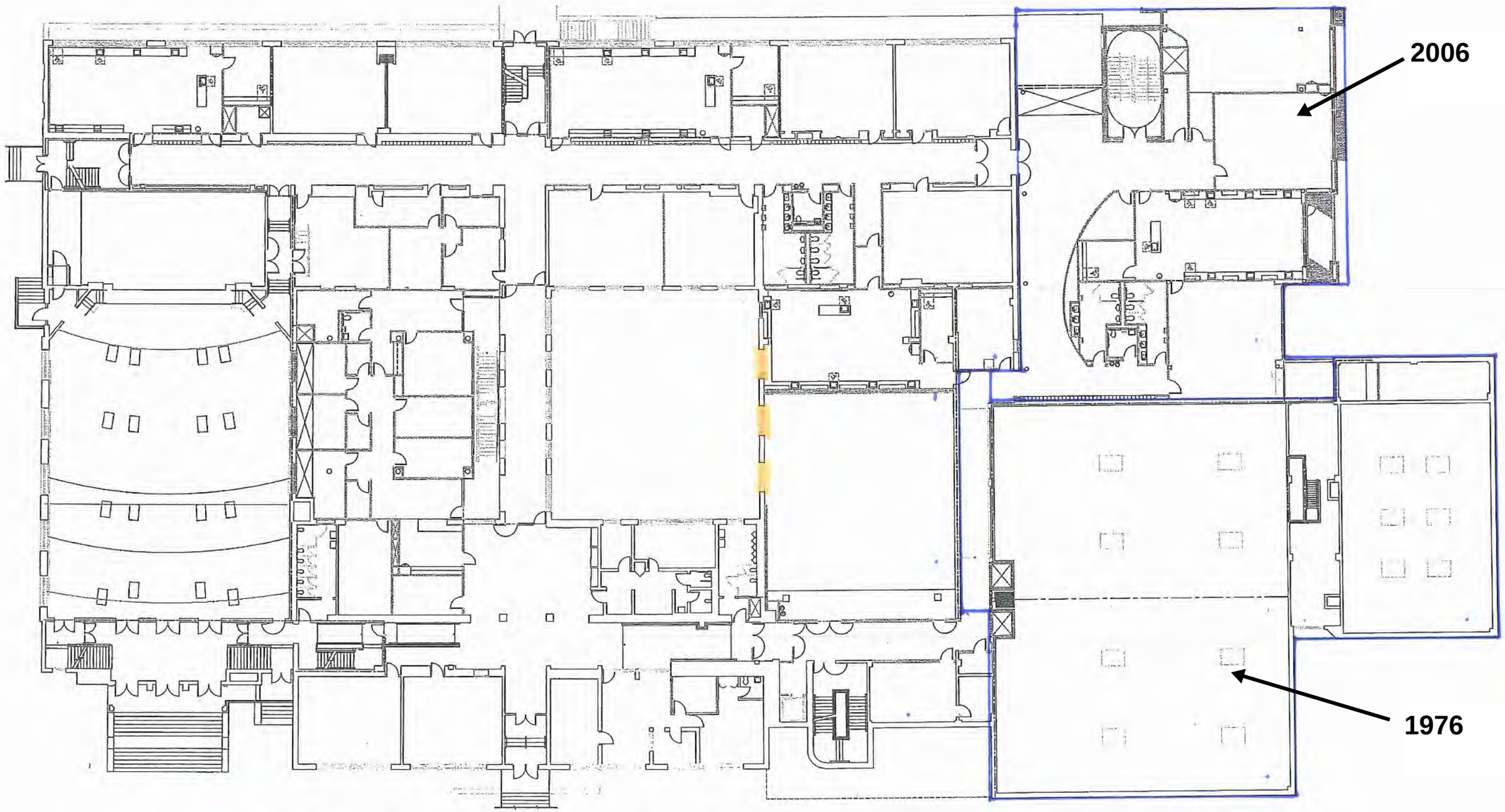


Type 2 - Interior window frame to CMU wall joints (Stairwell # 4 window)
Type 3 - Exterior brick to brick wall joints and brick to door frame joints (gymnasium)

Notes:
1. Types of caulking as presented in Table 3.

FIRST FLOOR PLAN

TOMLINSON MIDDLE SCHOOL



Type 1 - Interior window frame to brick joints (arched windows)

Notes:
1. Types of caulking as presented in Table 3.

SECOND FLOOR PLAN

Building Survey – Fairfield Woods Middle School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Fairfield Woods Middle School on February 20, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 1115 Fairfield Woods Road

Initial Construction Date: 1953/54

Additions/Renovations: 1959, 1972, 1994, and 2012

Construction Type: The exterior of the building is constructed of unpainted brick and masonry with steel and wood structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU/drywall/plaster walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows and some single-paned aluminum framed interior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The gymnasium was observed to have sealed wood floors, painted CMU and panel walls with vertical steel support beams, and overhead ductwork and in-ceiling vents.

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Fairfield Woods Middle School is presented below.

Construction Date – The initial construction date of the building was 1953 and 1954; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. Building additions were added in 1959 and 1972, which also fall within this timeframe. There were additions constructed in 1994 and 2012, which fall outside of this timeframe; therefore the subject building area only includes the original building construction and additions through 1972.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs,

these specialty paints are typically not specified for use in school building settings). During the building survey, various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior.

Photos of typical building sealants observed during the building survey are provided below.

Existing Data – No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 19 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 87% of the interior samples and 75% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the dates of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building with double-paned aluminum framed exterior windows and some single-paned aluminum framed interior windows.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was <u>not</u> observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building survey, similar stone tile flooring was observed at Fairfield Woods Middle School. It is our understanding, based on discussion with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., post 1979) would isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile area described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, two suspect materials have been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measures in these areas are presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1
Interior Chlorine Screening Results - Fairfield Woods Middle School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-200-004	0.0386	Room 200	CMU to textured block	Red, Pliable, Intact, Painted
FWMS-001-009	0.0518	Room 001	CMU to steel support beam	White, Brittle, Hard, Painted
FWMS-A129-012	0.815	Room A129	Beam to CMU	Silver, Pliable, Intact, Exposed
FWMS-A112H-013	0.0644	Room A112 Hallway	CMU block seam	Intact, Pliable, Painted
FWMS-LMC-014	0.0409	Library Media Center	CMU seam	White, Pliable, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-216-002	0.332	Room 216	Int steel door frame to wall	White, Pliable, Intact, Painted
FWMS-A148-008	0.061	Room A148	Ext door frame to metal	White, Pliable, Intact, Painted
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-216-001	0.0752	Room 216	T1 DPA window frame to wall	White, Pliable, Intact, Exposed
FWMS-206-003	0.0884	Room 206	T1 DPA window frame to CMU	White, Pliable, Intact, Painted
FWMS-52-005	0.7642	Stairwell 2/3	T1 DPA window frame to CMU	White, Pliable, Intact, Exposed
FWMS-B121-007	0.1043	Room B121	T1 DPA window frame to sill	Gray over White, Pliable over Hard, Exposed
FWMS-001-010	0.0573	Room 001	T2 SPA window glass to frame	Gray, Hard, Brittle, Exposed
FWMS-001-011	0.1141	Room 001	T2 SPA window glass to frame replacement	
FWMS-C102C-015	0.0793	C102C Cafeteria	T2 SPA Int window frame to brick	White, Pliable, Intact, Painted
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-B134H-006	0.0711	Room B134 Hallway	Locker base to tile	Gray, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 20, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above the chlorine indicator threshold.

Table 2
Exterior Chlorine Screening Results - Fairfield Woods Middle School

Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-BE-017	2.44	Building Exterior	Steel door to brick 1959	Gray over Beige, Hard, Painted, Intact
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-BE-016	0.0565	Building Exterior	T2 SPA window frame to brick	Beige over Gray, Pliable, Intact, Exposed
FWMS-BE-019	0.0514	Building Exterior	T1 DPA window frame to brick	White, Pliable, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FWMS-BE-018	0.0445	Building Exterior	Vent	Brown, Pliable, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 20, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates screening above the chlorine indicator threshold.

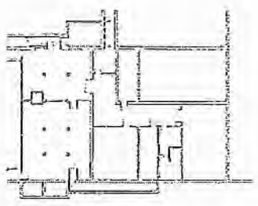
Table 3
Proposed Interim Measures - Fairfield Woods Middle School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 1	FWMS-A129-012	0.82	Interior	Silver, pliable caulking along interior CMU wall to steel beam joints. Materials are in good physical condition and not painted (except for the top two feet).	Twelve vertical joints within the 1959 portion of the building.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along interior locations. Application of cover material will further isolate materials.
Doors								
Type 3	FWMS-BE-017	2.44	Exterior	Dark gray, hard caulking over beige caulking along exterior door frame to wall joints. Materials are cracking and painted.	Four doors within the 1959 portion of the building.	Low	Conduct periodic visual inspection to check for damage or deterioration of existing coating. Reapply as needed to maintain existing coating.	Narrow bead of coated caulking along exterior joints away from areas frequented by staff and students.
Windows								
Type 2	FWMS-52-005	0.76	Interior	White, pliable, tacky caulking along interior window frame to wall joints of double paned window in the stairwell within the 1954 portion of the building. Material is in good physical condition and not painted (except for upper 5 feet).	1954 stairwell window.	Medium	Apply new bead of caulking or equivalent material to cover exisiting caulking. Conduct periodic visual inspection to check for damage or deterioration of installed caulking.	Narrow bead of uncoated caulking along interior locations. Application of cover material will further isolate materials.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Interior hallways as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

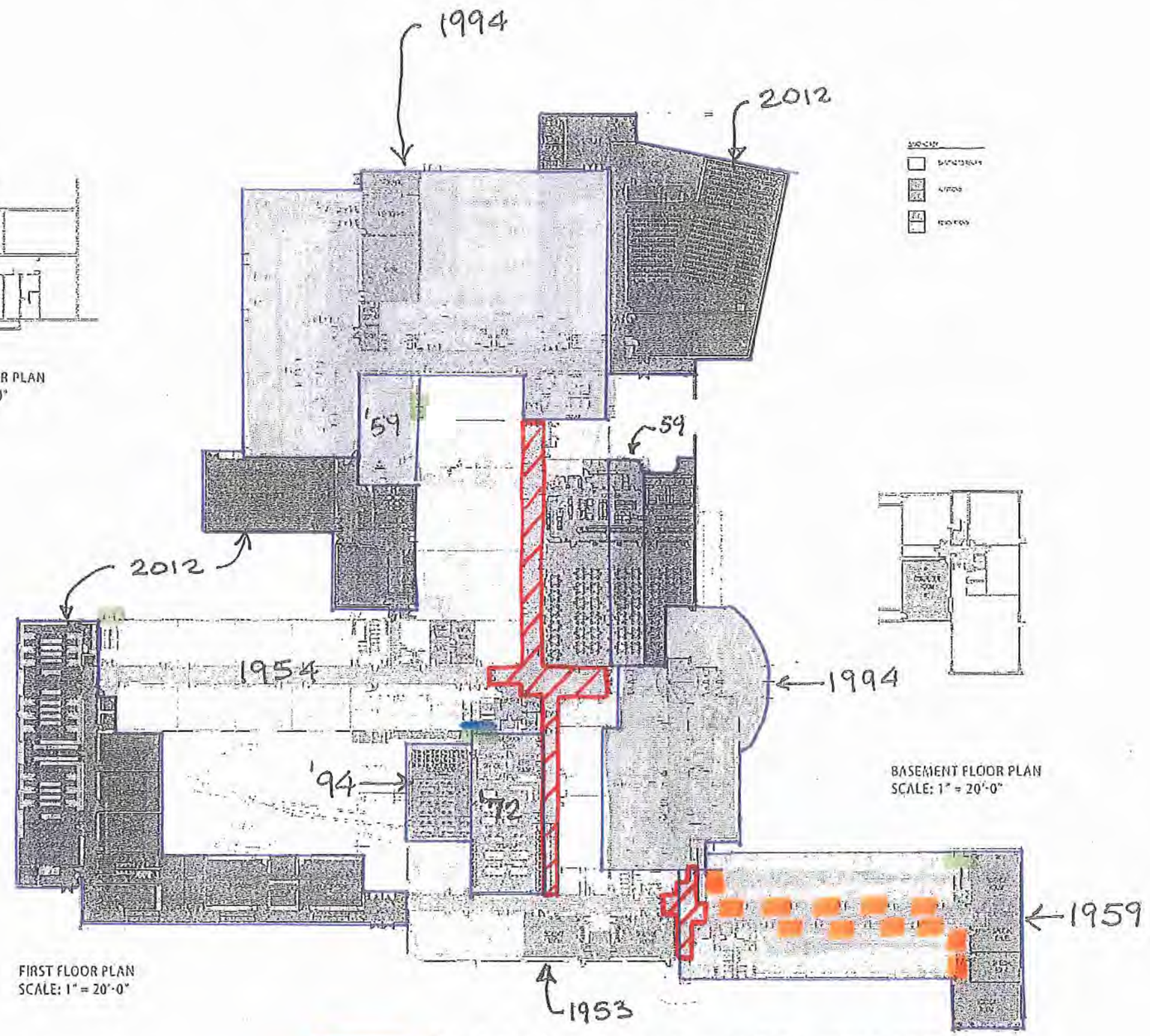
Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

FAIRFIELD WOODS MIDDLE SCHOOL



BASEMENT FLOOR PLAN
SCALE: 1" = 20'-0"



BASEMENT FLOOR PLAN
SCALE: 1" = 20'-0"

FIRST FLOOR PLAN
SCALE: 1" = 20'-0"

Type 1 - Interior vertical steel beam to CMU wall joints (1959 portion)
Type 2 - Interior window frame joints
Type 3 - Exterior door frame joints (1954 and 1959 portions)
Tile Sealer/Finisher

Notes:
1. Types of caulking as presented on Table 3

HIGH SCHOOLS

Building Survey – Fairfield Ludlowe High School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Fairfield Ludlowe High School on February 14, 2013 with a follow-up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) a best management practice for those materials determined to be suspect.

Building Information

Location: 785 Unquowa Road

Initial Construction Date: 1950

Additions/Renovations: 1961/62, 1971/72, and 2005

Construction Type: The exterior of the building is constructed of unpainted brick/stone and masonry with steel and wood structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU/drywall walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with double-paned aluminum framed exterior windows, and some single-paned aluminum framed exterior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The building has two gymnasiums. The gymnasium was observed to have sealed wood floors, painted CMU and panel walls with vertical steel support beams, painted steel ceiling, and overhead ductwork and in-ceiling vents.

Screening Assessment

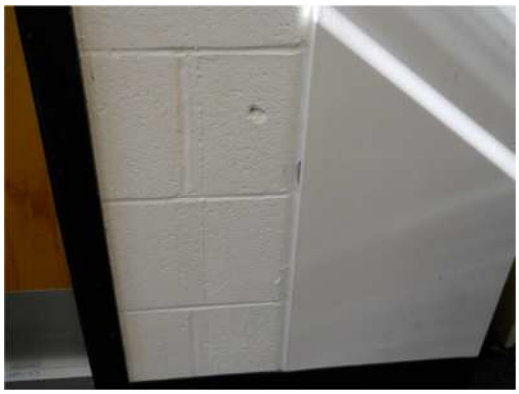
There were several key parameters evaluated as part of the screening assessment. A summary of these parameters in the context of the Fairfield Ludlowe High School is presented below.

Construction Date – The initial construction date of the building was 1950; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. Building additions were added in 1961/62 and 1971/72 which also fall within this timeframe. The building addition constructed in 2005 falls outside of this timeframe; therefore the subject building area only includes the original building construction and additions through 1972.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs,

these specialty paints are typically not specified for use in school building settings). During the building survey, various caulking and window glazing sealants were observed most notably a gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior.

Photos of typical building sealants observed during the building survey are provided below.



Existing Data – As part of a previous pre-renovation hazardous materials survey, samples of suspect materials within the proposed renovation areas were analyzed by a laboratory to determine PCB presence and concentration. Initial sampling was conducted in October 2011 and follow-up sampling was conducted April 2012 through January 2013. Results include the following:

- Window caulking and glazing sealant samples collected from October 2011 to July 2012 (multiple events)
  - Exterior and interior caulking samples detected PCBs at concentrations up to 660,000 ppm and 4,900 ppm, respectively
  - Exterior and interior glazing sealant samples detected PCBs at concentrations up to 41,000 ppm and 72 ppm, respectively
- Adjacent building substrate and soil samples collected from July 2012 to January 2013 (multiple events)

- PCBs detected at concentrations > 1 ppm in both substrate and soils with decreasing concentrations with distance from the windows; in March and April 2013 and as an interim measure, fabric membrane and wood mulch was installed to prevent direct contact with > 1 ppm soils.

o Indoor air and surface wipe samples collected from Room 203, 220, and corridor – February 2012

- PCBs not detected above 50 ng/m^3 in any of the three indoor air samples
- PCBs not detected (<1 µg/100cm^2) in three of the four wipe samples; 1 sample detected PCBs at 1.6 µg/100cm^2 (window sill).

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 29 samples of various sealants, caulking, and other materials were collected from locations throughout the building's interior and exterior. In addition to assessing representative materials across the building, a sample of exterior window caulking identified through previous analytical testing as containing ≥ 50 ppm was collected for screening. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 90% of the interior samples and 50% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the existing analytical data, window caulking and glazing sealants are known to contain ≥ 50 ppm PCBs; based on the date of construction of the building, other caulking materials are considered suspect for PCBs.
- Numerous types of window systems and window styles were present throughout the building and even within rooms of the building. Numerous windows appear to have been updated over time and repair projects (replacement sealants) are evident in some areas.

- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was <u>not</u> observed at the school.***
- Indoor air samples collected from select areas indicated PCBs were not detected in the samples.
- Analytical results from samples of interior and exterior window caulking and glazing sealants indicated that PCBs ≥ 50 ppm were present (Note: chlorine screening results indicated that exterior window caulking identified as ≥ 50 ppm PCBs through analytical testing were above the chlorine indicator threshold).
- Analytical results from building substrate and soil samples adjacent to the tested windows indicated that PCBs were present at concentrations > 1 ppm. Fabric membrane and wood mulch were placed over soils with PCBs > 1 ppm as an interim measure to prevent direct contact with the soils.
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building surveys similar stone tile flooring was observed at Fairfield Ludlowe High School. It is our understanding, based on discussions with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., past 1979) would isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).
- A review of the screening results indicated that 90% of the interior samples and 50% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figures and include only those materials and locations with chlorine screening data over the relative indicator threshold, the stone tile area described above, and known areas with PCBs ≥ 50 ppm based on existing laboratory data.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our additional initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed
- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings, the existing analytical data, and the results of the follow-up survey, one material has been identified for a near-term interim measure, such as temporary cover. This area and the proposed interim measure is presented on Table 3.

Longer-term or Material Management During Renovations

As indicated above, as part of planned building renovation activities, samples of suspect PCB-containing materials (such as caulking and sealants) have been collected and analyzed by a laboratory in order to determine presence and concentration. Several of these samples detected PCB concentrations in excess of disposal thresholds as indicated in EPA's and CTDEEP's regulations and/or guidance. As such, proper abatement specifications and plans are being developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project. This process of properly removing and managing regulated materials during renovation projects is implemented for other regulated building materials, such as asbestos or lead-based paint.

Table 1
Interior Chlorine Screening Results - Fairfield Ludlowe High School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-106-001	1.19	Room 106 Aux Gym	CMU to CMU	Gray, Brittle, Intact, Painted
FLHS-106H-003	3.71	Room 106 Hallway	Vertical CMU seam	Gray, Hard, Intact, Painted
FLHS-121-004	6.18	Room 121	CMU to steel support beam AND SPA window	Gray, Hard, Intact, Painted
FLHS-121-005	0.0649	Room 121	CMU to drywall joint	White, Pliable, Intact, Painted
FLHS-R242C-011	0.2174	Room 242 Connector	CMU wall to steel beam vertical seam	Pliable, Intact, Painted
FLHS-347-018	0.1722	Room 347	Steel support beam to CMU	White, Pliable, Intact, Painted
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-106-002	0.1094	Room 106 Aux Gym	Steel doorframe to upper lintel	White, Pliable, Intact, Exposed
FLHS-CYE-006	0.0724	Courtyard Entrance	Steel door frame to painted brick	Pliable, Intact, Painted
FLHS-CYE-007	0.2453	Courtyard Entrance	Door window metal to glass	Black, Pliable, Intact, Exposed
FLHS-314-020	0.4605	Room 314	Door upper panel to CMU	White, Pliable, Intact
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-123-008	0.025	Room 123	T2 window to CMU	Gray, Pliable, Exposed
FLHS-R223H-009	0.1581	Room 223 Hallway	T5 window metal to CMU	Gray, Pliable, Intact, Exposed
FLHS-225-010		Room 225	T6 window metal to glass	Brittle, Exposed
FLHS-220-012	0.1125	Room 220	Window frame to sill	Gray, Pliable, Weathered, Exposed
FLHS-276-013	0.0258	Room 276	T3 window	Silver, Pliable, Intact, Exposed
FLHS-ST10-014	0.1849	Stairwell #10	T9 window	Pliable, Intact, Exposed
FLHS-ST10-015	0.3351	Stairwell #10	T9 window frame to brick	Hard, Intact, Partially Painted
FLHS-347-016	0.0327	Room 347	T10 window frame to sill	Gray, Brittle, Intact, Exposed
FLHS-347-017	0.2225	Room 347	T10 window frame to brick	Brown, Pliable, Intact, Exposed
FLHS-314-019	0.1045	Room 314	T4 window frame to CMU	Gray, Pliable, Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-CAF-021	0.1254	Cafeteria	Radiator to CMU wall	White, Pliable, Intact

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 14, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates samples with chlorine above the indicator threshold.

Table 2
Exterior Chlorine Screening Results - Fairfield Ludlowe High School

Wall Seam Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-BE-026	9.89	Building Exterior	Brick to brick seam Room 145	Gray, Pliable, Exposed
FLHS-BE-027	0.0497	Building Exterior	Cafeteria brick to frame	Gray, Pliable, Intact, Exposed
FLHS-BE-028	6.22	Building Exterior	Brick to brick seam Room 125	Pliable, Intact, Exposed
Door Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-BE-025	0.4628	Building Exterior	Stairwell 10 ext door frame to brick	Pliable, Weathered, Exposed
Window Caulking Screening Results				
Sample ID	**Chlorine Screening by XRF[1]**	**Location**	**Materials**	**Description**
FLHS-BE-022	8.32	Building Exterior	Rm 256 window ext frame to brick	Gray, Pliable, Exposed
FLHS-BE-023	0.0718	Building Exterior	Rm 256 window ext frame to sill	Gray, Pliable, Exposed
FLHS-BE-024	0.385	Building Exterior	Rm 276 window ext frame to brick/metal	Pliable, Weathered, Exposed
FLHS-BE-029	1.86	Building Exterior	SPA to brick shop ext.	Gray/Silver, Pliable, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine.
2. Survey activities were limited to suspect sealants accessible on February 14, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shading indicates samples with chlorine above the indicator threshold.

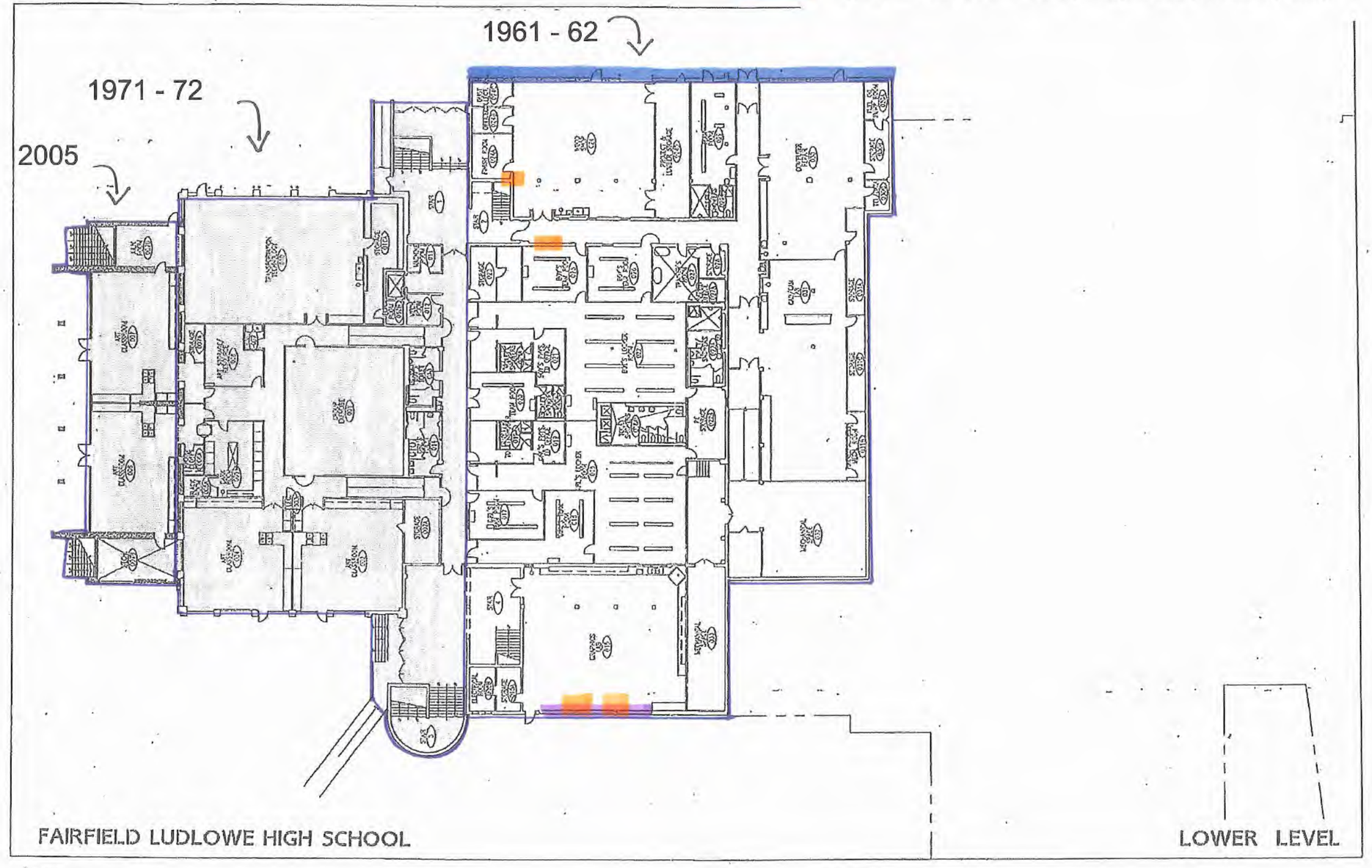
Table 3
Proposed Interim Measures - Fairfield Ludlow High School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Wall Seam Materials								
Type 1	FLHS-106-001 FLHS-121-004 FLHS-106H-003	1.19 6.18 3.71	Interior	Gray, hard caulking observed along interior CMU to steel beams and aluminum window frames to steel beams at more than 100 locations throughout the 1961/62 sections of the building. Sealant is in good condition and painted (primarily white).	All CMU to steel and CMU to window joints within the 1961 section of the building.	Low	Conduct periodic visual inspection to check for cracks, chips, or wearing of paint. Repaint as needed to maintain existing coating.	Narrow bead of intact, hard caulking along vertical CMU to metal joints covered with an existing coating of paint.
Type 2	FLHS-BE-026	9.89	Exterior	Soft gray caulking over brown caulking observed along eleven exterior vertical wall seams located on the 1971/72 portion of the building. The material is in good physical condition and not coated.	Eleven exterior locations within first floor overhang and main entry areas in the 1971 - 72 portion of the building (as shown on ground level drawing).	Low	Conduct periodic visual inspections to check for damage or deterioration and confirm use of surrounding areas.	Limited number of narrow beads of intact not coated caulking located in exterior areas near entryways; limited potential for direct contact based on number and width of joints.
Type 3	FLHS-BE-028	6.22	Exterior	Soft, light gray caulking over soft tacky gray caulking along three exterior vertical brick to brick joints in the original portion of the building. Sealant has a weathered appearance and is not coated.	Three exterior joints on the ground level of the 1950 portion of the building as depicted (as shown on the ground level drawing).	Low	Conduct periodic visual inspection to check for damage or deterioration and confirm use of surrounding areas.	Limited number of narrow beads of intact caulking located on exterior of building away from areas frequented by staff and students; therefore limited potential for direct contact.
Windows								
Type 4	FLHS-BE-022	8.32	Interior	Interior and exterior window frame caulking and/or glazing sealants associated with windows in the pre-2005 portions of the building. Materials typically in good physical condition and not painted. Analytical laboratory data indicated that PCBs were present at concentrations up to 660,000 ppm in the exterior window caulking and 4,900 ppm in interior window caulking.	Majority of exterior windows in those portions of the building constructed in 1950, 1961-62, and 1971-72.	Medium	Interior - Apply new bead of caulking or similar coating over existing caulking. Conduct periodic visual inspections to check for cracks, chips, or wearing of coating. Reapply as needed to maintain.	Interior - Narrow beads of non-coated intact caulking located on interior classroom spaces. Interim measures to be applied based on existing analytical data indicating ≥ 50 ppm PCBs present in interior window caulking. Application of new coating will isolate the materials until windows are replaced.
			Exterior			Low	Exterior - Conduct periodic visual inspections to check for damage or deterioration and to confirm use of surrounding areas.	Exterior - Narrow beads of intact caulking located on exterior locations away from areas frequented by staff and students; limited potential for direct contact. Extent of windows depicted on attached figures based on existing analytical data indicating ≥ 50 ppm PCBs present in exterior window caulking. Fabric membrane and wood mulch has been installed over soils identified as containing > 1 ppm PCBs.
Type 5	FLHS-BE-029	1.86	Exterior	Silver, pliable caulking with gray skim coat observed along exterior brick and concrete to single paned window frames and masonry joints (below frames) within a portion of the building constructed in 1961/62. Masonry joints extend below the windows and terminate at ground surface.	Exterior windows on the lower level in the portion of the building constructed in 1961 - 62.	Low	Conduct periodic visual inspection to check for damage or deterioration and confirm use of surrounding spaces.	Narrow beads of intact caulking located on exterior of building away from areas frequented by staff and students; limited potential for direct contact.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear, tile sealant/finisher applied to stone tile in select areas of the building. Coating is in good physical condition with no areas of flaking or cracking observed.	Interior lobby area on the first level as depicted.	Low	Conduct periodic visual inspection to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coatings applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:
1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

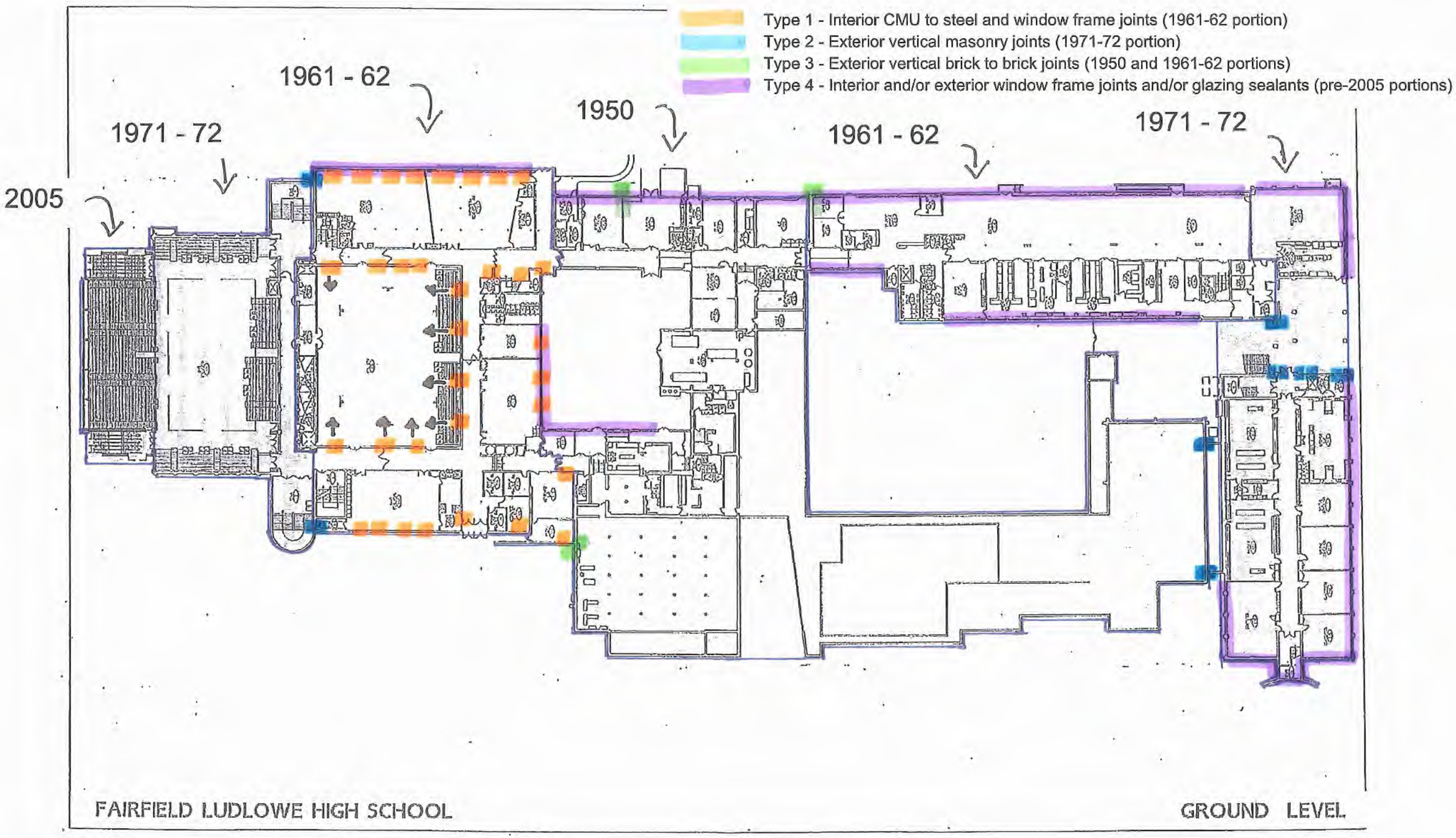
FAIRFIELD LUDLOWE HIGH SCHOOL

Type 1 - Interior CMU to steel and window frame joints (1961/62 portion)
Type 4 - Interior and/or exterior window frame joints and/or glazing sealants (pre-2005 portions)
Type 5 - Exterior window frame joints (1961-62 portion shop area)



Notes:
1. Types of Caulking as presented on Table 3

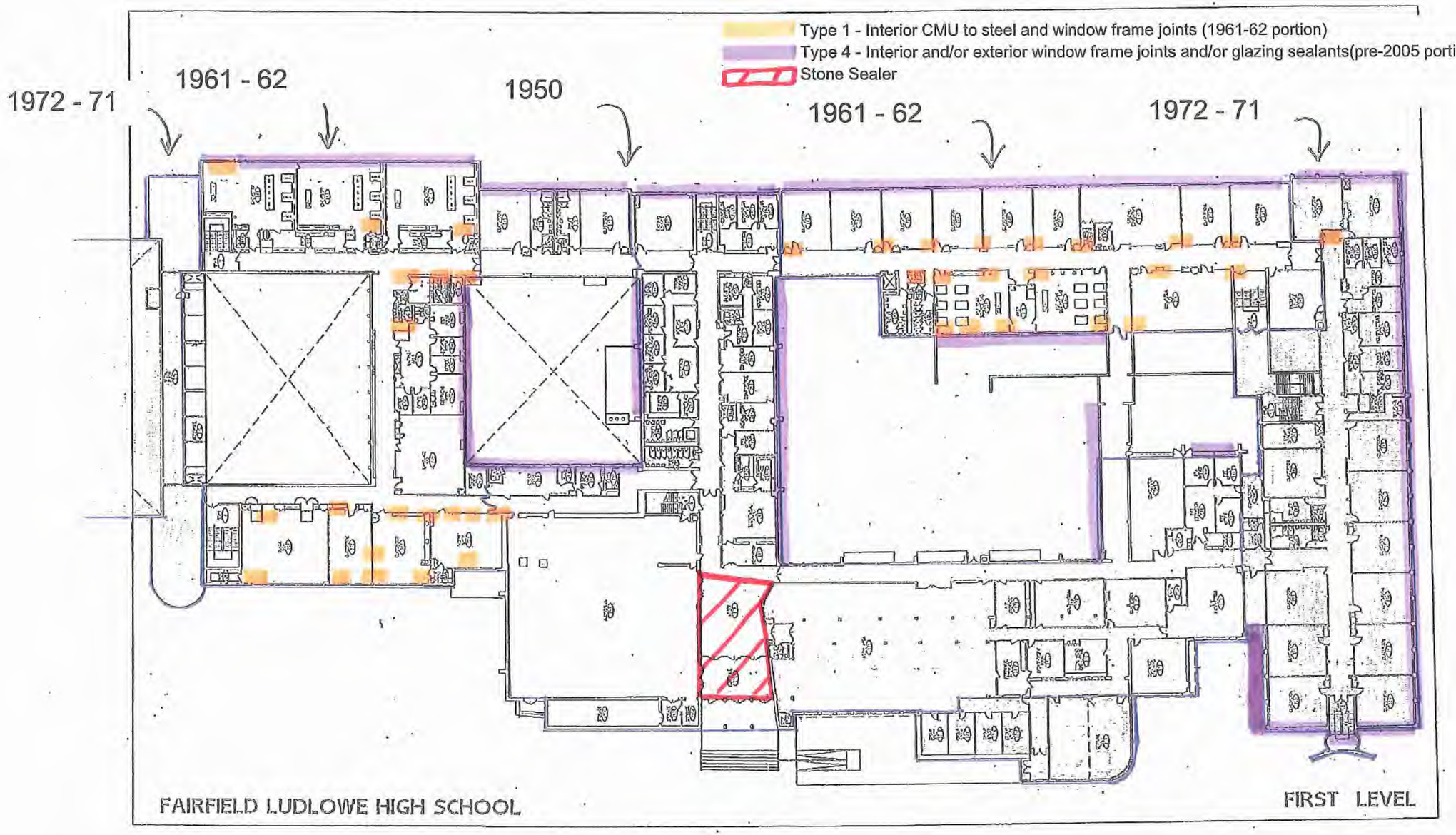
FAIRFIELD LUDLOWE HIGH SCHOOL



Notes:

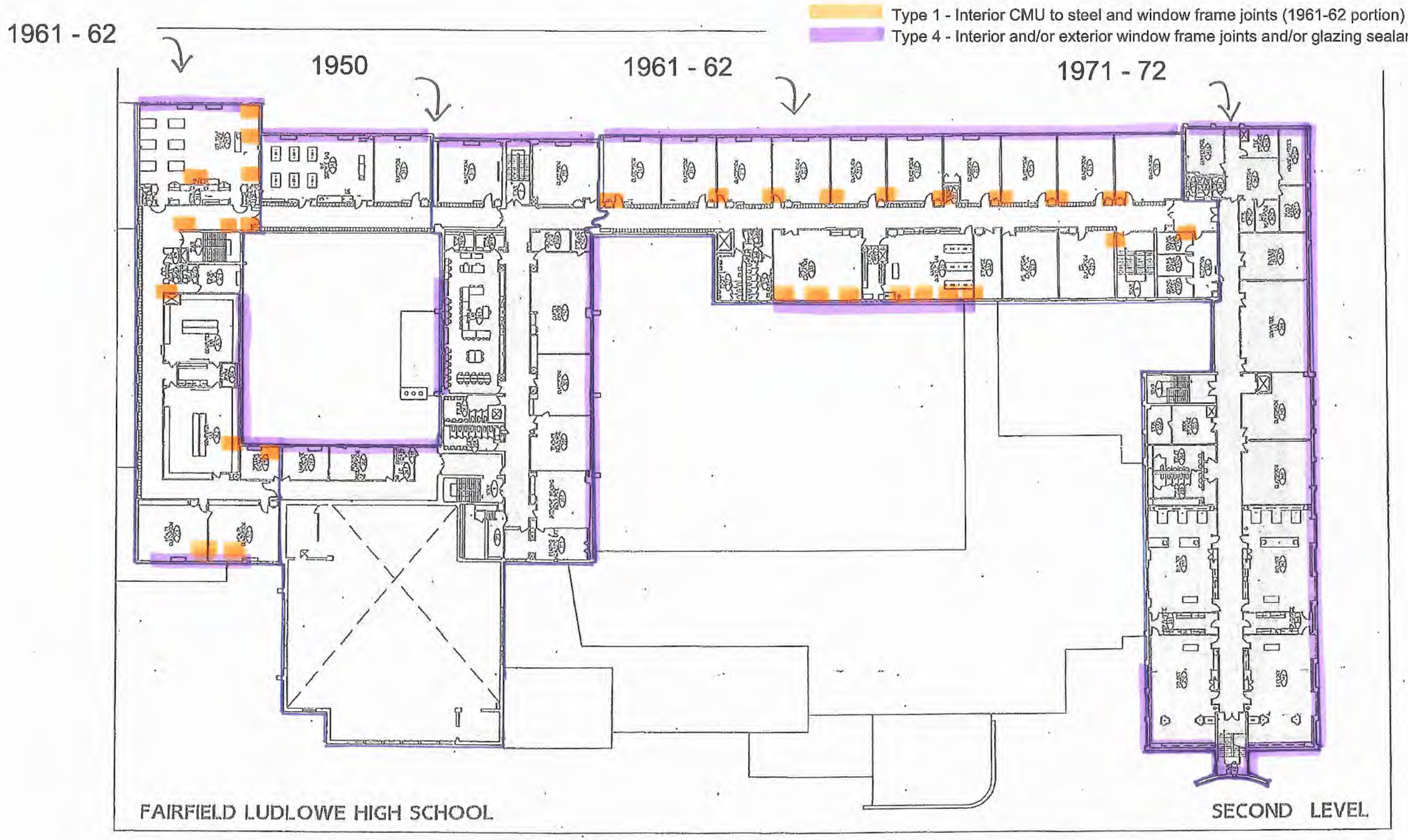
1. Types of Caulking as presented on Table 3

FAIRFIELD LUDLOWE HIGH SCHOOL



Notes:
1. Types of Caulking as presented on Table 3

FAIRFIELD LUDLOWE HIGH SCHOOL



Notes:
1. Types of Caulking as presented on Table 3

Building Survey – Fairfield Warde High School

Introduction

As part of a district-wide school building review project, Woodard & Curran completed an on-site building survey of the Fairfield Warde High School on February 15, 2013 with a follow up survey in July 2013. The building survey focused on identifying building materials that may be suspect to contain polychlorinated biphenyls (PCBs). PCBs were sometimes used in standard construction materials from the 1950s through the 1970s. The building survey information has been used to develop: 1) a screening assessment of the potential for PCBs to be present in building materials; and 2) best management practices for those materials determined to be suspect.

Building Information

Location: 755 Melville Road

Initial Construction Date: 1955

Additions/Renovations: 2003 and 2006

Construction Type: The exterior of the building is constructed of unpainted brick/stone and masonry with steel and wood structural components. Interior building construction materials were observed to be consistent in most areas of the school and can be characterized as having vinyl tile flooring, painted CMU/drywall walls, and drop ceilings. Observed HVAC systems consisted of in-room radiators and overhead ductwork and vents. Windows were observed to be generally consistent across the building as well; with single-paned aluminum framed interior windows, and some single-paned aluminum framed exterior windows. Interior doors were observed to be primarily steel-framed with wood doors, and exterior doors were generally observed to be steel-framed with steel doors. The building has two gymnasiums. The "large" gymnasium was observed to have sealed wood floors, painted CMU and panel walls with vertical steel support beams, tectum panel ceiling with painted steel supports, and overhead ductwork and in-ceiling vents. The "small" gymnasium was observed to have sealed wood floors, painted CMU/brick and panel walls with vertical steel support beams, tectum panel ceiling with painted steel supports, and overhead ductwork and in-ceiling vents

Screening Assessment

There were several key parameters evaluated as part of this screening assessment. A summary of these parameters in the context of the Fairfield Warde High School is presented below.

Construction Date – The initial construction date of the building was 1955; therefore the time of construction falls within the timeframe of when PCBs were sometimes used in standard construction materials. There were additions constructed in 2003 and 2006, which fall outside of this timeframe; therefore the subject building area only includes the original building construction.

Presence of Primary Suspect Materials – In typical school building settings, primary building materials that may have been manufactured with PCBs and could be accessible predominantly include caulking and sealants (NOTE – although some specialty paints have been known to be manufactured with PCBs, these specialty paints are typically not specified for use in school building settings). During the building survey, various caulking and window glazing sealants were observed most notably gray and white caulking along the interior and exterior window frames; painted-over sealants along door frame to CMU joints, and sealants at brick to brick/CMU joints along the building exterior.

Photos of typical building sealants observed during the building survey are provided below.

Existing Data – No existing samples of suspect materials from the building have been analyzed by a laboratory to determine PCB presence and concentration.

Physical Condition and Chlorine Screening - The absence of chlorine in a certain building material is one line-of-evidence that PCBs may not be present within that building material (since chlorinated organics are a key component of PCBs). However, chlorine presence cannot be assumed to indicate PCB presence because many sealants and other building materials contain other chlorinated compounds as part of their composition. During the February 2013 survey, 31 samples of various sealants, caulking, and additional materials were collected from locations throughout the building's interior and exterior. The samples were screened for chlorine content using a handheld Niton X-Ray Fluorescence (XRF) Analyzer. The results of the XRF screening are presented on Table 1 (interior) and Table 2 (exterior). A physical

description of each material (brittle, pliable, exposed or covered with another coating, such as paint, etc.) is also included on the tables.

Based on chlorine screening data (via XRF) collected at other buildings, a typical percent chlorine level has been established at which below this level, subsequent bulk samples for laboratory analyses typically would not correspond to PCB levels at ≥ 50 ppm, the Federal regulatory threshold for PCB Bulk Product Waste. Correlation to higher levels of chlorine to potential PCB concentrations are inconclusive with regard to PCB presence ≥ 50 ppm since other chlorinated compounds may be present in the samples. A review of the data indicated that 95% of the interior samples and 80% of the exterior samples screened fell below the chlorine indicator threshold.

Summary – Screening Assessment

Overall observations included the following:

- Caulking and glazing sealants were observed throughout the building, primarily associated with window and door systems and expansion joints; the majority of the sealants were observed to be intact and pliable; given the date of construction of the building, these materials are considered suspect for PCBs.
- Windows were observed to be generally consistent across the building as well with single-paned aluminum framed interior and exterior windows.
- ***The spray-on fireproofing material at Osborn Hill gymnasium ceiling (primary driver for indoor air PCB levels) was <u>not</u> observed at the school.***
- A review of the Osborn Hill data indicated that a sealer applied to the stone tile flooring in a hallway was tested and found to contain PCBs. It is not known if this material was manufactured with PCBs or contained PCBs as a result of a cross-contamination effect from the gymnasium source (as mentioned in the July 18, 2012 report prepared by AMC Environmental, LLC). During the building surveys, similar stone tile flooring was observed at Fairfield Warde High School. It is our understanding, based on discussion with janitorial staff at multiple schools, that a new coat of sealer (Plaza Plus Sealer/Finisher manufactured by Diversey) is purchased and applied annually during the summer breaks. As such, if PCBs were present in sealers applied historically, the application of additional coatings after the time PCBs were banned (i.e., post 1979) would isolate the underlying materials from current direct contact (see the discussion on Near Term or Best Management Practices below for additional information).
- A review of the data indicated that 95% of the interior samples and 80% of the exterior samples screened fell below the chlorine indicator threshold.

Follow-up Survey

A follow-up survey of materials identified above the chlorine indicator threshold was conducted to assess the applicability for implementing a near term best practice such as an interim measure/temporary cover over the suspect material. The locations of the materials included in the follow-up survey are presented on the attached figure and include only those materials and locations with chlorine screening data over the relative indicator threshold and the stone tile area described above.

The determination for a need for a near term interim measure was based on the physical condition of the materials and the probability for direct contact with the materials (accessibility). To apply a consistent approach for this determination, a relative ranking system was developed to categorize each material location as either low or medium with regard to the probability for direct contact with the suspect material, as described below:

- Low – materials are coated with another material (e.g., paint); or located in an area of inaccessibility or limited access (e.g., > 8 feet from ground surface, restricted access areas, exterior locations away from frequent access areas, etc.).
- Medium – non-coated (i.e., unpainted or deteriorated coatings) materials in an accessible area (e.g., classrooms, playgrounds, exterior locations proximate to areas of frequent use, etc.).

These classifications were then used to determine the need and timing for an interim measure or best practice. For materials that were categorized as "low", visual inspections are recommended in order to assess the continued effectiveness of the existing coating or to verify accessibility and use of the area. For materials categorized as "medium", application of a coating (e.g., new sealant) or similar cover material is proposed to temporarily cover the material and prevent direct contact.

The results from this evaluation and proposed near term actions specific to the building are presented in the following section.

Management Program – PCBs in Building Materials

The findings of the initial screening process, as described above, serve as the starting point to develop a management program for building materials that may contain PCBs. This program can be separated into two components: 1) Near-term or Best-Management Practices; and 2) Longer-term or Material Management During Renovations. The overall goal of the program is to minimize or eliminate potential exposures to suspect PCB-containing materials until these materials are removed from the building during planned renovation or building improvement projects.

Near Term or Best Management Practices

It is important to make a distinction between the mere presence of a PCB-containing building material and exposure potential. As presented in EPA guidance, presence of a regulated PCB-containing material within a given building does not necessarily equate to an exposure risk. In order for this condition to occur there needs to be a complete pathway established between the source and the individual through a transport mechanism, such as direct contact/transfer or indoor air.

Our initial recommendation is to follow EPA and CTDEEP recommended best management practices to reduce potential exposure to PCBs from suspect building materials in schools. These practices include:

- Avoid direct contact with suspect materials within reasonable means
- Clean frequently to reduce dust and residue inside buildings
- Use a wet or damp cloth or mop to clean surfaces
- Using vacuums with high efficiency particulate air filters
- Do not sweep with dry brooms; minimize the use of dusters near areas with caulk
- Improve ventilation and add exhaust fans, as needed

- Wash children's toys often
- Encourage proper hygiene amongst staff and students (i.e. wash hands with soap and water regularly, particularly before eating or drinking)

Based on the screening survey findings and the results of the follow-up survey, one suspect material has been identified for a near term interim measure, such as temporary cover. A discussion and rationale for the proposed interim measure in this area is presented on Table 3.

Longer-term or Material Management During Renovations

Materials that are to be disturbed as part of future renovation activities at the school will require assessment to properly characterize the materials for worker protection requirements, site containment and controls, and disposal profiling. Depending on the reported concentrations, materials demonstrated to contain PCBs may require proper abatement specifications and remediation plans to be developed to properly manage and dispose of off-site the subject materials as part of the planned renovation project.

Table 1

Interior Chlorine Screening Results - Fairfield Warde High School

Wall Seam Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-NEE-009	0.2602	Northeast Entrance	Brick to brick seam	Beige over silver, Partially intact, Exposed
FWHS-LG-015	0.1283	Large Gym	vertical steel to CMU joint	Gray, Hard, Intact, Painted
FWHS-SG-017	0.2621	Small Gym	vertical steel to CMU joint	White, Pliable, Intact, Painted
FWHS-MEH-019	0.1202	Main Entrance Hallway	Brick to brick seam	Brown, Hard
Door Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-F42-001	0.095	Room 42	Steel door frame to CMU	White, Pliable, Intact, Painted
FWHS-F39H-005	0.2484	Room F39 Hallway	Door frame to CMU	White, Pliable, Intact, Painted
FWHS-T16-011	0.4424	Room T16	Steel door frame to CMU	White, Pliable, Intact, Painted
FWHS-T11H-012	0.1737	Room T11 Hallway	Steel door frame to CMU	White, Pliable, Intact, Painted
FWHS-GH-014	0.5728	Gym Hallway	Boys locker door frame to unpainted brick	Hard, Intact, Exposed
FWHS-LG-016	0.1978	Large Gym	Steel door frame to CMU	Black, Pliable, Intact, Painted
FWHS-AUD-018	0.2465	Auditorium/Stage	Door frame of changing room to CMU	Black, Pliable, Painted
Window Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-F42-002	0.358	Room 42	T1 SPA window frame to CMU	White, Pliable, Intact, Painted
FWHS-F42-003	0.0498	Room 42	T1 SPA window glass to metal lower pane	Pliable, Intact, Exposed
FWHS-F42-004	0.2123	Room 42	T1 SPA window glass to metal upper pane	Gray, Hard, Intact, Exposed
FWHS-F39H-006	0.3516	Room F39 Hallway	T2 SPA window metal to glass	Gray, Pliable, Intact
FWHS-F22-007	0.3832	Room F22	T3 Ext window metal to CMU/metal	Gray
FWHS-SEE-008	0.1077	Southeast Entrance	T4 SPA window frame to brick	Pliable, Intact, Exposed
FWHS-T16-010	0.1615	Room T16	T5 window metal to glass	Pliable, Intact, Exposed
FWHS-MEH-021	0.1574		T4 SPA window frame to brick	Gray, Pliable, Intact, Exposed
'Other' Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-BAS-013	0.0772	Basement	Duct	Red, Intact, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine
2. Survey activities were limited to suspect sealants accessible on February 15, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shade indicates above Chlorine indicator threshold

Table 2

Exterior Chlorine Screening Results - Fairfield Warde High School

Wall Seam Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-BE-023	0.3148	Building Exterior	Brick to brick seam; Townsend House office	Gray, Pliable, Intact, Exposed
FWHS-BE-031	0.06	Building Exterior	Brick to brick seam	Beige, Pliable, Intact
Door Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-BE-024	1.18	Building Exterior	Door frame to brick; Fitts House	Brown/Gray, Pliable, Intact, Exposed
FWHS-BE-027	0.1163	Building Exterior	Basement door	Hard, Weathered, Painted
FWHS-BE-030	0.1734	Building Exterior	Door frame	Weathered, Exposed
Window Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-BE-022	0.1798	Building Exterior	T4 SPA window glass to metal	Gray, Pliable, Intact, Exposed
FWHS-BE-025	9.75	Building Exterior	Window frame to brick	Brown, Pliable, Intact, Exposed
FWHS-BE-026	0.1198	Building Exterior	Window metal to glass	Brown, Pliable, Intact, Exposed
FWHS-BE-028	0.144	Building Exterior	Sill to brick	Hard, Weathered, Exposed
'Other' Caulking Screening Results				
Sample ID	**%**	**Location**	**Materials**	**Description**
FWHS-BE-029	0.0913	Building Exterior	Vent	Pink, Pliable, Weathered, Exposed

Notes:

1. The X-Ray Fluorescence (XRF) screening test was performed ex-situ using a ThermoFisher Niton XL3t GOLDD+ XRF analyzer; results are reported as percent (%) chlorine
2. Survey activities were limited to suspect sealants accessible on February 15, 2013
3. CMU - Concrete Masonry Unit
4. Int - Interior
5. Ext - Exterior
6. DPA - Double-Paned Aluminum Window Frame
7. SPA - Single-Paned Aluminum Window Frame
8. Gray shade indicates above Chlorine indicator threshold

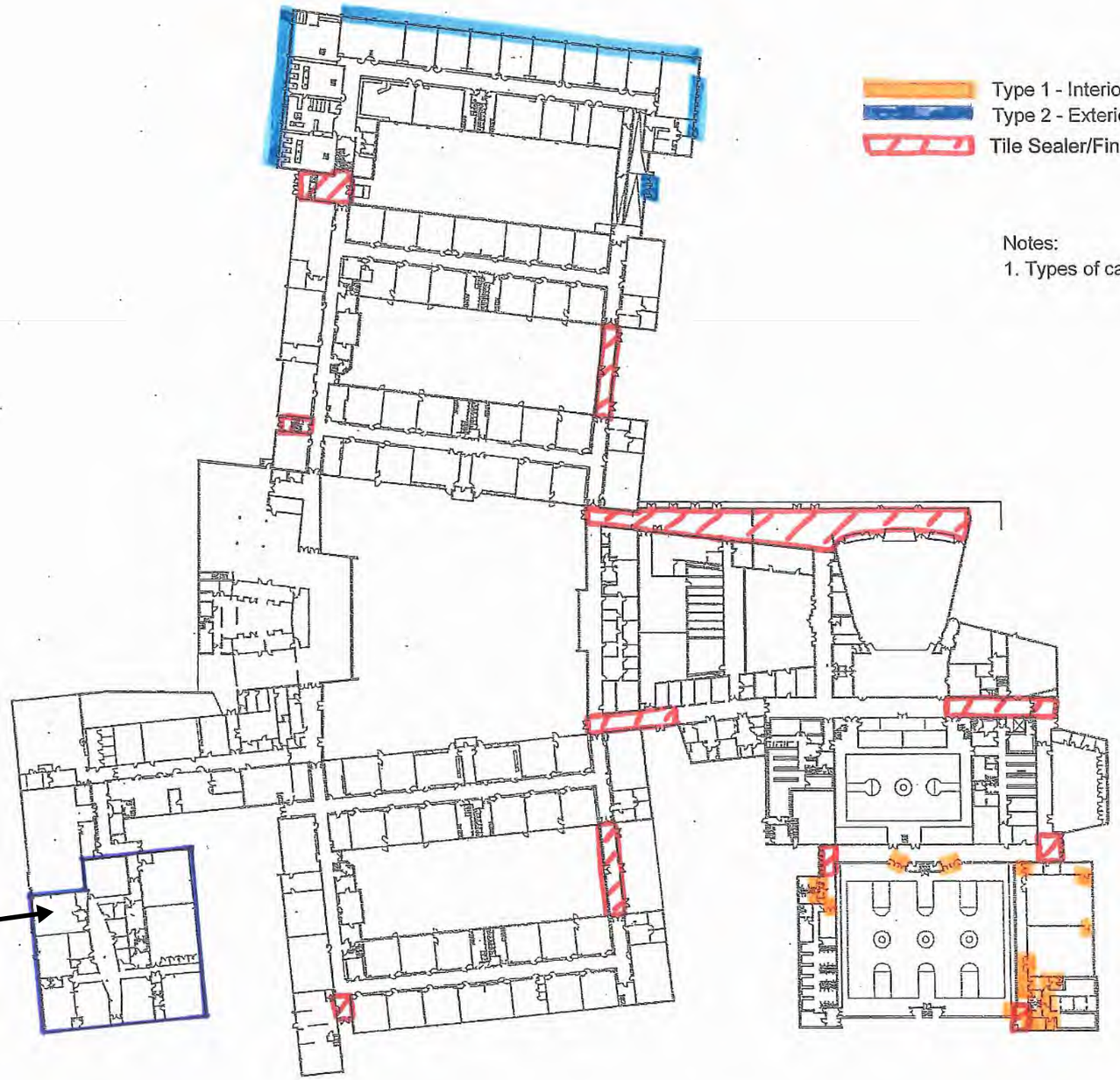
Table 3
Proposed Interim Measures - Fairfield Warde High School

Type [1]	Representative Samples	% Chlorine	Interior/Exterior Material	Material Description	Location	Probability for Contact with Existing Caulking	Proposed Action	Rationale
Doors and Windows								
Type 1	FWHS-GH-014	0.57	Interior	Brown, hard, pliable caulking over hard, pliable caulking along interior gray door frame to brick wall joints in the gymnasium hallway. Materials are in good physical condition and not painted.	Gymnasium interior hallway doors.	Medium	Apply new bead of caulking or similar coating over existing caulking. Conduct periodic visual inspection to check for damage or deterioration of applied coating.	Narrow bead of caulking at interior locations. Application of coating will further isolate the materials.
Type 2	FWHS-BE-024 FWHS-BE-025	1.18 and 9.75	Exterior	Dark brown, pliable caulking along exterior door and windows. Caulking is in good physical condition and not painted.	Exterior doors and windows on first and second floor locations along the "Fitts House" portion of the building.	Low	Conduct periodic visual inspections to check for damage or deterioration of existing caulking and to confirm use of surrounding areas.	Narrow bead of caulking at exterior locations away from areas frequented by staff and students.
Other								
Tile Sealant/Finisher	N/A	N/A	Interior	Clear tile sealant/finisher applied to stone tile in select areas of the building. Materials were in good physical condition with limited areas of flaking and cracking observed in the two stairway landing areas.	Interior hallways as depicted.	Low	Conduct periodic visual inspections to check for damage or deterioration of applied coatings (applied annually). Reapply as needed.	Coating applied annually as part of standard building maintenance to be used as interim measures coating.

Notes:

1. Type based on classification of materials utilized during follow up interim measures evaluation survey.

FAIRFIELD WARDE HIGH SCHOOL



Type 1 - Interior Door frame joints (gymnasium area)
Type 2 - Exterior door and window perimeter joints (1st and 2nd floors)
Tile Sealer/Finisher

Notes:
1. Types of caulking as presented on Table 3.

2003/2006