



April 4, 2018

Mr. Todd Davis  
Site Assessment Manager  
U.S. Environmental Protection Agency, Region 7  
11201 Renner Blvd.  
Lenexa, Kansas 66219

**Subject: Targeted Brownfields Assessment Survey Report for Asbestos, Lead-Based Paint, and Polychlorinated Biphenyls at Mead Hansen Building, 408 S. 8th Street, St. Joseph, Buchanan County, Missouri**  
**U.S. EPA Region 7, START 4, Contract No. EP S7 13 06, Task Order No. 0002.043**  
**Task Monitor: Todd Davis, EPA On-Scene Coordinator**

Dear Mr. Davis:

Tetra Tech, Inc. is submitting the attached Targeted Brownfields Assessment (TBA) Survey report regarding asbestos, lead-based paint, and polychlorinated biphenyls at the Mead Hansen Building site at 408 S. 8th Street, St. Joseph, Buchanan County, Missouri.

If you have any questions or comments regarding this submittal, please call John Simpson at (816) 412-1772.

Sincerely,

A handwritten signature in black ink that reads 'John R. Simpson'.

John R. Simpson, CHMM  
START Project Manager

A handwritten signature in blue ink that reads 'Ted Faile'.

Ted Faile, PG, CHMM  
START Program Manager

cc: Debra Dorsey, START Project Officer (cover letter only)

**TARGETED BROWNFIELDS ASSESSMENT  
SURVEY REPORT FOR ASBESTOS, LEAD-BASED PAINT, AND POLYCHLORINATED  
BIPHENYLS**

**MEAD HANSEN BUILDING  
408 S. 8<sup>th</sup> STREET  
ST. JOSEPH, MISSOURI**

**Superfund Technical Assessment and Response Team (START) 4 Contract  
Contract No. EP-S7-13-06, Task Order 0002.043**

Prepared For:

U.S. Environmental Protection Agency  
Region 7  
11201 Renner Blvd.  
Lenexa, Kansas 66219

April 4, 2018

Prepared By:

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## **1.0 INTRODUCTION**

The Tetra Tech, Inc. (Tetra Tech) Region 7 Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a Targeted Brownfields Assessment (TBA) including surveys for asbestos-containing materials (ACM) and lead-based (LBP) paint at the Mead Hansen Building site (the Site), at 408 S. 8th Street in St. Joseph, Buchanan County, Missouri (see Appendix A, Figure 1). As part of a redevelopment initiative, the Mo-Kan Regional Council in St. Joseph, Missouri requested EPA perform a Phase I TBA and Phase II TBA including ACM and LBP surveys. Sampling and analysis for polychlorinated biphenyls (PCB) also occurred.

The Site encompasses approximately 0.7 acre at 408 S. 8<sup>th</sup> Street in St. Joseph, Buchanan County, Missouri. The Site is included on the St. Joseph North, Missouri, U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 1997) (see Appendix A, Figure 1). Coordinates at the approximate center of the Site are 39.7637690 degrees north latitude and 94.8510450 degrees west longitude.

Tetra Tech's field team leader for the TBA ACM and LBP surveys was Ms. Megan Sawyer, Certified Missouri Asbestos and LBP Inspector. The survey team included Ms. Sawyer and Mr. John Simpson. Copies of Ms. Sawyer's Inspector Certifications are in Appendix B. Survey strategy and sample collection methodology were developed based on the possibility that all parts of the Site buildings, both inside and outside, could be impacted by future renovation and/or demolition plans. Due to limited access to parts of the buildings and because destructive sampling methods were limited, additional suspect materials not detected may be present inside walls, roofs, voids, or other concealed areas. Assumptions and deviations regarding each building surveyed on the Site are identified in Section 10.0.

Tetra Tech conducted the survey on December 19, 2017. The purpose of the survey was to evaluate the Site for presence, quantity, locations, and characterization of ACM that may require abatement prior to any demolition or renovation activities in accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as adopted by the EPA. The intent of the asbestos NESHAP regulations is to protect the public (and workers) by minimizing release of asbestos fibers during activities involving processing, handling, and disposal of ACM. In some instances, due to limited access, visual documentation of suspect materials was completed instead of sample collection.

Tetra Tech also conducted a screening for presence, quantity, and locations of damaged LBP exceeding lead hazard levels and requiring Occupational Safety and Health Administration (OSHA) worker safety

precautions during remodeling activities. Tetra Tech screened paint-covered surfaces using an x-ray fluorescence (XRF) spectrometer. Because the Site's building was constructed prior to 1978, LBP was likely used in the build-out of this structure. The LBP survey proceeded according to protocols similar to the single-family housing inspection procedures in the Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of LBP in Housing* (HUD 1997).

Because the Site's building was constructed prior to 1978, caulking materials containing polychlorinated biphenyls (PCB) may also be present. Tetra Tech screened suspect materials for presence, quantity, and locations of PCBs exceeding the action level that would require OSHA worker safety precautions during demolition or renovation activities.

Tetra Tech provided these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. This statement is in lieu of other statements either expressed or implied. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user. This report does not warrant against future operations or conditions that could affect its recommendations. In addition, completing the survey does not guarantee identification of all hazardous materials, asbestos, or LBP, because parts of the building were not accessible and because—given some limitations on destructive sampling—hazardous materials may be present in voids of walls or ceilings or in roofing materials.

Section 2.0 of this report describes the structure on the Site. Section 3.0 specifies field and analytical protocols for the asbestos survey. Section 4.0 presents field and analytical protocols for LBP screening. Section 5.0 describes the survey and analytical protocols for the PCB survey. Section 6.0 presents asbestos findings. Section 7.0 describes LBP findings. Section 8.0 discusses PCB findings. Section 9.0 offers recommendations based on survey findings. Section 10.0 discusses assumptions and deviations.

## **2.0 SITE STRUCTURES**

The Site is occupied by one vacant industrial building (the Mead Hansen Building) and an asphalt parking lot on the north-central portion of the property. The Mead Hansen Building, which has one level and a basement, has been empty for several years and is in dilapidated condition. Access to the building is from S. 8<sup>th</sup> Street. The building includes a manufacturing area, garage, offices, a lobby area, restrooms, and several closets. A ramp in the northern portion of the manufacturing area leads to the basement. In the basement are two boilers, hot water heater, and several storage rooms.

### **3.0 ACBM FIELD SURVEY AND ANALYTICAL PROTOCOLS**

Tetra Tech made every effort to inspect all areas of the Site's building. Minor demolition of materials (destructive sampling) was required during the survey effort. The inspector took care to ensure that the areas remained unoccupied during sample collection. Asbestos samples were collected in accordance with NESHAP as adopted by EPA and the Asbestos Hazard and Emergency Response Act of 1986 (AHERA) protocols. AHERA defines "asbestos-containing building material" (ACBM) as any building material or product that contains more than 1 percent (%) asbestos. Suspected ACBMs were grouped as homogeneous areas if the material was similar in appearance and texture; however, if the inspector decided that a material (for example, wall texturing) was not similar in appearance and texture to other materials in the building, the inspector distinguished the material as unique and collected samples of each unique material accordingly. Due to limited access to parts of the building and because destructive sampling methods were limited, additional suspect materials not detected may be present in walls, voids, roof materials, or other concealed areas. A photographic log of the building and materials sampled is in Appendix C. Assumptions and deviations regarding the building surveyed on the Site are identified in Section 10.0.

Bulk samples of suspected ACBM were collected to ensure that each distinct layer of material was represented in the sample. A wetting agent was applied to friable surfaces prior to sample collection to reduce potential for fiber release. All samples collected were placed in plastic bags, labeled, and sealed immediately upon collection. To prevent cross-contamination between samples, the sampling instruments were wiped clean by use of a wet, lint-free cloth after collection of each sample. A unique sample identification number was assigned to each sample.

The samples remained in the inspector's custody until sent to the laboratory. Upon completion of sampling activities, the bulk samples were sent, along with Tetra Tech's chain-of-custody documentation, to EMLab P&K, LLC (EMLab P&K) in Arvada, Colorado. Suspect ACBM samples were analyzed per EPA Method 600/R-93/116 via Polarized Light Microscopy (PLM) analysis. EMLab P&K is a National Voluntary Laboratory Accreditation Program (NVLAP)-certified laboratory, certification number 200728-0. Appendix D includes ACBM analytical results and chain-of-custody forms for the bulk samples, and Section 6.0 summarizes ACBM analytical results.



#### 4.0 LBP SCREENING AND ANALYTICAL PROTOCOLS

Tetra Tech made every effort to inspect all paint-covered masonry surfaces suitable for reuse as fill (i.e. brick, concrete, stone, etc.) on the structure. HUD *Guidelines for the Evaluation and Control of LBP in Housing* suggests that paint applied before 1978 could contain lead (HUD 1997).

An XRF screening of suspected LBP was performed according to protocols similar to the single-family housing inspection procedures in the HUD *Guidelines*. Tetra Tech utilized an Innov-X XRF spectrometer to perform the LBP screening. The Innov-X is a state-of-the-art XRF spectrum analyzing system for quantitative measurement of lead in paint on various substrates. Tetra Tech performed XRF screening of suspect painted masonry surfaces suitable for reuse as fill (i.e., brick, concrete, stone, etc.).

Tetra Tech utilized the XRF “Lead Paint Mode” for testing, standardized per the equipment instruction manual, and programmed the unit with an action level of 1.0 milligram per square centimeter (mg/cm<sup>2</sup>). The Innov-X automatically adjusts the measurement time to be the least time needed to make a definitive measurement based on the action level. Paint containing greater than or equal to 1.0 mg/cm<sup>2</sup> lead by XRF testing or 1.0 mg/cm<sup>2</sup> lead by laboratory analysis is considered LBP.

Tetra Tech performed XRF calibration checks on the Innov-X according to the manufacturer’s recommended protocol and the HUD *Guidelines*. These quality control readings were used to monitor performance of the Innov-X. Calibration-check readings were taken after every hour of operation with use of a Standard Reference Material (SRM) paint film, developed by the National Institute of Standards and Technology (NIST). Section 7.0 of this report summarizes results from XRF screening of samples of painted surfaces collected at the Site.

## **5.0 PCB FIELD SURVEY AND ANALYTICAL PROTOCOLS**

Tetra Tech made every effort to inspect all areas of the Site's building. Minor demolition of materials (destructive sampling) was required during the survey effort. The inspector took care to ensure that the areas remained unoccupied during sample collection. Samples of caulk possibly containing PCBs were collected following EPA guidance. EPA has set an action level of 50 parts per million (ppm) for PCBs in materials, and that was the benchmark used for this survey. Suspected PCB-containing caulk materials were grouped as homogeneous areas if the material was similar in appearance and texture; however, if the inspector decided that a material was not similar in appearance and texture to other materials in the building, or that the material was associated with a different building construction date, the inspector distinguished the material as unique and collected samples of each unique material accordingly. Assumptions and deviations regarding the building PCB survey are identified in Section 8.0.

Bulk samples were collected to ensure that only suspect PCB-containing caulk materials were represented in the sample. A wetting agent was applied to the material prior to sample collection to reduce potential for particulate release. All samples collected were placed in plastic bags, labeled, and sealed immediately upon collection. To prevent cross-contamination between samples, the sampling instruments were wiped clean by use of a wet, lint-free cloth after collection of each sample. A unique sample identification number was assigned to each sample.

The samples remained in the inspector's custody until sent to the laboratory. Upon completion of sampling activities, the bulk samples were sent, along with Tetra Tech's chain-of-custody documentation, to Pace Analytical Services (Pace) laboratory in Minneapolis, Minnesota. Bulk samples of suspect PCB-containing caulk materials were analyzed per EPA Method SW 846 8082 by Pace. Appendix E includes PCB analytical results and chain-of-custody forms for those bulk samples, and Section 8.0 summarizes analytical results from those samples.

## **6.0 ACBM FINDINGS**

The laboratory report in Appendix D conveys PLM results from the samples of suspect ACBM collected at the Site; these results are summarized in Table 1 below. A bolded result in Table 1 indicates that asbestos was detected at concentration greater than 1 percent.

TABLE 1

**SUMMARY OF SUSPECT ACBM LABORATORY ANALYSIS  
MEAD HANSEN BUILDING**

Figure Key	Sample ID	Material Description	Material Locations	Friable (F)/ Non-Friable (NF)	Analytical Result (% ACBM*)	Quantity	Estimated Abatement Cost****
1	CT1-1	Smooth 1' X 4' Ceiling Tile	Offices	F	ND	NA	NA
2	CT1-2	Smooth 1' X 4' Ceiling Tile	Offices	F	ND	NA	NA
3	CT1-3	Smooth 1' X 4' Ceiling Tile	Offices	F	ND	NA	NA
4	WM-1	Wood Wall Panel Mastic	Front Entrance Office Areas	NF	ND	NA	NA
4	WM-2	Wood Wall Panel Mastic	Front Entrance Office Areas	NF	ND	NA	NA
6	WM-3	Wood Wall Panel Mastic	Front Entrance Office Areas	NF	ND	NA	NA
7	FT-1	9" X 9" Tan Floor Tile / Black Mastic	South Entrance, Stairs	NF	2% Chrysotile / ND	20 SF	\$250.00
8	FT-2	9" X 9" Tan Floor Tile / Black Mastic	South Entrance, Stairs	NF	Not Analyzed**		
9	FT-3	9" X 9" Tan Floor Tile / Black Mastic	South Entrance, Stairs	NF	Not Analyzed**		
10	LIN-1	Square Pattern Linoleum / Yellow Mastic	East Entryway	F	15% Chrysotile / ND	50 SF	\$500.00
11	LIN-2	Square Pattern Linoleum / Yellow Mastic	East Entryway	F	Not Analyzed**		
12	LIN-3	Square Pattern Linoleum / Yellow Mastic	East Entryway	F	Not Analyzed**		
13	TERR-1	White Terrazzo	East Entrance	NF	<1% Chrysotile***	NA	NA
14	TERR-2	White Terrazzo	East Entrance	NF	<1% Chrysotile***	NA	NA
15	TERR-3	White Terrazzo	East Entrance	NF	<1% Chrysotile***	NA	NA
16	WG-1	Window Glazing	Front Office	F	ND	NA	NA
17	WG-2	Window Glazing	Front Office	F	ND	NA	NA
18	WG-3	Window Glazing	Front Office	F	ND	NA	NA
19	WG1-1	Window Glazing	Manufacturing Area	F	ND	NA	NA
20	WG1-2	Window Glazing	Manufacturing Area	F	ND	NA	NA
21	WG1-3	Window Glazing	Manufacturing Area	F	ND	NA	NA

TABLE 1 (Continued)

**SUMMARY OF SUSPECT ACBM LABORATORY ANALYSIS  
MEAD HANSEN BUILDING**

Figure Key	Sample ID	Material Description	Material Locations	Friable (F)/ Non-Friable (NF)	Analytical Result (% ACBM*)	Quantity	Estimated Abatement Cost****
22	FT1-1	Brown Floor Tile / Brown Mastic	South Entrance Stairs	NF	ND	NA	NA
23	FT1-2	Brown Floor Tile / Brown Mastic	South Entrance Stairs	NF	ND	NA	NA
24	FT1-3	Brown Floor Tile / Brown Mastic	South Entrance Stairs	NF	ND	NA	NA
25	IN-1	Exterior Boiler Insulation	Basement Boiler	F	10% Chrysotile	150 SF	\$2,600.00
26	IN-2	Exterior Boiler Insulation	Basement Boiler	F	Not Analyzed**		
27	IN-3	Exterior Boiler Insulation	Basement Boiler	F	Not Analyzed**		
28	Transite-1	Exterior Transite Panels	East and South Side Behind Black Paneling, West Side Above Garage Door – Exterior Panels	NF	20% Chrysotile	430 SF	\$1,000.00
29	Transite-2	Exterior Transite Panels	East and South Side Behind Black Paneling, West Side Above Garage Door – Exterior Panels	NF	Not Analyzed**		
30	Transite-3	Exterior Transite Panels	East and South Side Behind Black Paneling, West Side Above Garage Door – Exterior Panels	NF	Not Analyzed**		
31	WM1-1	Exterior Wall Panel Mastic	East Side Exterior – Under Plastic Panels	NF	10% Chrysotile	150 SF	\$800.00
32	WM1-2	Exterior Wall Panel Mastic	East Side Exterior – Under Plastic Panels	NF	Not Analyzed**		
33	WM1-3	Exterior Wall Panel Mastic	East Side Exterior – Under Plastic Panels	NF	Not Analyzed**		
34	CT-1	2' X 4' Fissure and Pinhole Ceiling Tile	Offices	F	ND	NA	NA
35	CT-2	2' X 4' Fissure and Pinhole Ceiling Tile	Offices	F	ND	NA	NA
36	CT-3	2' X 4' Fissure and Pinhole Ceiling Tile	Offices	F	ND	NA	NA
37	Airoid-1	Airoid Pipe Insulation	Throughout Basement and Manufacturing Area	F	30% Chrysotile	3" – Basement, 180 LF	\$5,800.00

TABLE 1 (Continued)

**SUMMARY OF SUSPECT ACBM LABORATORY ANALYSIS  
MEAD HANSEN BUILDING**

Figure Key	Sample ID	Material Description	Material Locations	Friable (F)/ Non-Friable (NF)	Analytical Result (% ACBM*)	Quantity	Estimated Abatement Cost****
38	Airocell-2	Airocell Pipe Insulation	Throughout Basement and Manufacturing Area	F	Not Analyzed**	6”– Manufacturing Floor, 350 LF	
39	Airocell-3	Airocell Pipe Insulation	Throughout Basement and Manufacturing Area	F	Not Analyzed**		
40	DW-1	Drywall	Backroom Near Basement Entrance	F	ND	NA	NA
41	DW-2	Drywall	Backroom Near Basement Entrance	F	ND	NA	NA
42	DW-3	Drywall	Backroom Near Basement Entrance	F	ND	NA	NA
43	DW-4	Drywall	Backroom Near Basement Entrance	F	ND	NA	NA
44	DW-5	Drywall	Backroom Near Basement Entrance	F	ND	NA	NA
45	PLSC-1	Plaster System with Skim Coat	Throughout	NF	ND	NA	NA
46	PLSC-2	Plaster System with Skim Coat	Throughout	NF	ND	NA	NA
47	PLSC-3	Plaster System with Skim Coat	Throughout	NF	ND	NA	NA
48	PLSC-4	Plaster System with Skim Coat	Throughout	NF	ND	NA	NA
49	PLSC-5	Plaster System with Skim Coat	Throughout	NF	ND	NA	NA
50	DC-1	Exterior Door Caulk	East Side	NF	<1% Chrysotile***	NA	NA
51	DC-2	Exterior Door Caulk	East Side	NF	<1% Chrysotile***	NA	NA
52	DC-3	Exterior Door Caulk	East Side	NF	<1% Chrysotile***	NA	NA
53	PLS-1	Ceiling Plaster System	Offices	NF	ND	NA	NA
54	PLS-2	Ceiling Plaster System	Offices	NF	ND	NA	NA
55	PLS-3	Ceiling Plaster System	Offices	NF	ND	NA	NA
56	RM-1	Roofing Material	Roof	NF	ND	NA	NA
57	RM-2	Roofing Material	Roof	NF	ND	NA	NA
58	RM-3	Roofing Material	Roof	NF	ND	NA	NA
59	J-1	Piping Joint Insulation	Basement – South Boiler	F	30% Chrysotile	12” Joint	\$175.00
60	J-2	Piping Joint Insulation	Basement – South Boiler	F	Not Analyzed**		

TABLE 1 (Continued)

**SUMMARY OF SUSPECT ACBM LABORATORY ANALYSIS  
MEAD HANSEN BUILDING**

Figure Key	Sample ID	Material Description	Material Locations	Friable (F)/ Non-Friable (NF)	Analytical Result (% ACBM*)	Quantity	Estimated Abatement Cost****
<b>61</b>	<b>J-3</b>	<b>Piping Joint Insulation</b>	<b>Basement – South Boiler</b>	<b>F</b>	<b>Not Analyzed**</b>		
62	C4-1	Exterior Expansion Caulk	East Side	NF	ND	NA	NA
63	C4-2	Exterior Expansion Caulk	East Side	NF	ND	NA	NA
64	C4-3	Exterior Expansion Caulk	East Side	NF	ND	NA	NA
65	DC-2-1	Exterior Door Caulk	East Door	NF	ND	NA	NA
66	DC-2-2	Exterior Door Caulk	East Door	NF	ND	NA	NA
67	DC-2-3	Exterior Door Caulk	East Door	NF	ND	NA	NA
68	C1-1	Exterior Expansion Caulk	SW Corner	NF	ND	NA	NA
69	C1-2	Exterior Expansion Caulk	SW Corner	NF	ND	NA	NA
70	C1-3	Exterior Expansion Caulk	SW Corner	NF	ND	NA	NA

Notes:

**Bolded results indicate that ACBM was detected.**

\* AHERA defines ACBM as any material or product that contains more than 1 % asbestos.

\*\* The lab was instructed to “stop on first positive,” which means if more than one sample is to be collected from a homogenous material, after the first sample to indicate asbestos is encountered, the remaining samples are not analyzed.

\*\*\* EPA defines ACBM as greater than 1% asbestos. These materials contain <1% asbestos; therefore, the material is not regulated for disposal purposes. However, the material does contain asbestos, so if the material is disturbed, OSHA regulations must be followed, and personal protective equipment must be used.

\*\*\*\* This is only an estimated abatement cost based on industry averages. This cost assumes all abatement will occur at the same time, and does not account for any prevailing wage that would be required. Any abatement contractor bidding on this work should visit the Site to verify quantities of ACM prior to estimating and submitting any costs for the abatement.

<	Less than	,	Feet
%	Percent	”	Inches
ACBM	Asbestos-containing building material		
AHERA	Asbestos Hazard and Emergency Response Act of 1986		
ft	Feet		
ID	Identification		
NA	Not applicable		
ND	Not detected		
OSHA	Occupational Safety and Health Administration		
SF	Square feet		
SW	Southwest		
LF	Linear Feet		

## **7.0 LBP FINDINGS**

XRF readings obtained at the Site are summarized in Table 2 below. A bolded result in the table indicates an XRF reading above 1.0 mg/cm<sup>2</sup>.



TABLE 2

**SUMMARY OF LBP SCREENING  
MEAD HANSEN BUILDING**

Sample No.	Paint Color	Room	Component	Substrate	Direction	XRF Reading (mg/cm <sup>2</sup> )	Condition (Good/Fair/Poor)	Quantity	Estimated Remediation Cost
1	Tan	Main Office Area	Wall	Plaster	West	0.06	NA	NA	NA
2	Tan	Main Office Area	Wall	Plaster	South	0.00	NA	NA	NA
3	Tan	Main Office Area	Wall	Plaster	East	0.00	NA	NA	NA
4	Tan	East Entryway	Wall	Wood	East	0.05	NA	NA	NA
5	Tan	North Office Area	Wall	Plaster	East	0.00	NA	NA	NA
6	Tan	North Office Area	Wall	Plaster	North	0.03	NA	NA	NA
7	Tan	North Office Area	Wall	Plaster	West	0.08	NA	NA	NA
8	Tan	North Office Area	Wall	Plaster	South	0.07	NA	NA	NA
9	Tan	Front Entryway Office	Door Frame	Wood	West	0.25	NA	NA	NA
<b>10</b>	<b>Tan</b>	<b>Front/South Entryway Office</b>	<b>Door Frame</b>	<b>Wood</b>	<b>West</b>	<b>5.00</b>	<b>Fair</b>	<b>132 LF</b>	<b>\$150.00</b>
<b>11</b>	<b>Blue</b>	<b>Front/South Entryway Office</b>	<b>Door</b>	<b>Wood</b>	<b>West</b>	<b>5.00</b>	<b>Fair</b>	<b>35 SF</b>	<b>\$200.00</b>
12	White	Front Entryway Office	Door	Wood	East	0.22	NA	NA	NA
13	Tan	Front Entryway After Stairs	Door Frame	Wood	West	0.10	NA	NA	NA
14	Blue	Front Entryway After Stairs	Door Frame	Wood	West	0.14	NA	NA	NA
15	Brown	Front Entryway After Stairs	Door	Wood	North	0.04	NA	NA	NA
16	White	Front Office	Wall	Cinder Block	West	0.04	NA	NA	NA
17	White	Front Office	Wall	Cinder Block	North	0.04	NA	NA	NA
18	White	Stairs	Wall	Cinder Block	South	0.04	NA	NA	NA
19	Blue	Front Entryway	Wall	Cinder Block	West	0.10	NA	NA	NA
20	White	Front Entryway	Door	Metal	East	0.11	NA	NA	NA
21	White	Front Entryway	Door Frame	Wood	South	0.00	NA	NA	NA
22	Blue	Front Entryway, Office	Wall	Wood	East	0.08	NA	NA	NA
23	White	Front Entryway Office, Exterior	Wall	Wood	East	0.06	NA	NA	NA
24	Red	Front Entryway Office, Exterior	Wall	Concrete	East	0.05	NA	NA	NA

TABLE 2 (Continued)

**SUMMARY OF LBP SCREENING  
MEAD HANSEN BUILDING**

Sample No.	Paint Color	Room	Component	Substrate	Direction	XRF Reading (mg/cm <sup>2</sup> )	Condition (Good/Fair/Poor)	Quantity	Estimated Remediation Cost
25	Lime Green	Front Entryway Office, Exterior	Door	Wood	North	0.05	NA	NA	NA
26	White	Front Entryway Office, Interior	Wall	Wood	West	0.04	NA	NA	NA
27	Blue	Entryway to Stairs to Upper Level	Door Frame	Wood	East	0.15	NA	NA	NA
28	White	Near Entryway to Stairs to Upper Level	Wall	Brick	North	0.01	NA	NA	NA
29	Blue	Entryway to Stairs, Upper Level	Wall	Brick	West	0.42	NA	NA	NA
30	White	Back Room to Upper Level	Wall	Brick	North	0.00	NA	NA	NA
31	White	Room to Upper Level	Ceiling	Drywall	East	0.01	NA	NA	NA
32	White	Manufacturing Area	Wall	Concrete	East	0.01	NA	NA	NA
33	Blue	Men's Bathroom, Manufacturing Area	Wall	Cinder Block	East	0.06	NA	NA	NA
<b>34</b>	<b>Blue</b>	<b>Men's Bathroom, Manufacturing Area</b>	<b>Door</b>	<b>Wood</b>	<b>East</b>	<b>1.01</b>	<b>Fair</b>	<b>35 SF</b>	<b>\$200.00</b>
35	Blue	Men's Bathroom, Manufacturing Area	Door	Wood	East	0.96	NA	NA	NA
36	Blue	Men's Bathroom, Manufacturing Area	Door Frame	Wood	East	0.05	NA	NA	NA
37	White	Men's Bathroom, Manufacturing Area	Wall	Brick	South	0.03	NA	NA	NA
38	Blue	Men's Bathroom, Manufacturing Area	Wall	Cinder Block	North	0.06	NA	NA	NA
39	White	Men's Bathroom Manufacturing Area	Wall	Cinder Block	North	0.00	NA	NA	NA
40	White	Men's Bathroom, Manufacturing Area	Wall	Cinder Block	South	0.00	NA	NA	NA
41	Blue	Manufacturing Area	Wall	Cinder Block	West	0.17	NA	NA	NA
42	White	Manufacturing Area	Wall	Cinder Block	West	0.01	NA	NA	NA
43	White	Manufacturing Area	Wall	Wood	North	0.10	NA	NA	NA
44	Blue	Manufacturing Area	Wall	Wood	North	0.20	NA	NA	NA
45	White	Manufacturing Area	Garage Door	Wood	South	0.50	NA	NA	NA

TABLE 2 (Continued)

**SUMMARY OF LBP SCREENING  
MEAD HANSEN BUILDING**

Sample No.	Paint Color	Room	Component	Substrate	Direction	XRF Reading (mg/cm <sup>2</sup> )	Condition (Good/Fair/Poor)	Quantity	Estimated Remediation Cost
46	Blue	Manufacturing Area	Garage Door	Wood	South	1.05	Fair	250 SF	\$500.00
47	Blue	Manufacturing Area	Column, Next to Garage Door North	Metal	South	0.41	NA	NA	NA
48	White	Manufacturing Area	Wall	Cinder Block	North	0.00	NA	NA	NA
49	Blue	Manufacturing Area	Wall	Cinder Block	North	0.07	NA	NA	NA
50	White	Basement	Wall	Cinder Block	East	0.03	NA	NA	NA
51	Blue	Basement	Wall	Cinder Block	East	0.28	NA	NA	NA
52	White	Basement	Ceiling	Concrete	North	0.00	NA	NA	NA
53	White	Basement	Wall	Brick	South	0.00	NA	NA	NA
54	White	Basement	Wall	Concrete	North	0.06	NA	NA	NA
55	Blue	Basement	Wall	Concrete	North	0.28	NA	NA	NA
56	Black	Manufacturing Area	Door	Wood	East	0.00	NA	NA	NA
57	Varnish	Garage Entrance	Door	Wood	North	0.00	NA	NA	NA
58	Varnish	Garage Entrance	Door Frame	Wood	North	0.00	NA	NA	NA
59	Rust	Garage	Pole	Metal	North	0.01	NA	NA	NA
60	Rust	Garage	Support Beams	Metal	North	0.44	NA	NA	NA
61	Cream	Exterior Garage Door	Door Frame	Wood	South	2.14	Poor	132 LF	\$250.00
62	Blue	Exterior, Near Garage Door	Panels	Transite	South	0.02	NA	NA	NA
63	Cream	Exterior	Garage Door	Wood	South	0.03	NA	NA	NA
64	Cream	Exterior, Garage Door	Door Frame	Wood	South	2.46	Poor	132 LF	\$250.00
65	White	Garage Door	Door	Metal	South	0.00	NA	NA	NA
66	White	Exterior	Wall	Metal	East	0.00	NA	NA	NA
67	Brown	Exterior Corner	Corner Wall	Metal	North East	0.03	NA	NA	NA
68	Cream	Exterior	Wall	Metal	North	0.03	NA	NA	NA
69	Green	Exterior	Panels	Plastic	South East	4.13	Fair	560 SF	\$950.00
70	Green	Exterior	Panels	Plastic	South East	1.84	Fair	560 SF	\$950.00
71	Black	Exterior	Panels	Plastic	South East	0.11	NA	NA	NA
72	Green	Exterior	Panels	Plastic	South East	2.20	Fair	560 SF	\$950.00

**TABLE 2 (Continued)**

**SUMMARY OF LBP SCREENING  
MEAD HANSEN BUILDING**

Notes:

Estimated costs to remediate LBP identified in Table 2 would depend on the method of remediation. Demolition and disposal of all interior surfaces containing LBP would cost approximately \$3.00 per square foot, for a total cost of approximately \$6,315. The other remediation method would include stabilization and encapsulation of LBP surfaces at a cost of approximately \$5.00 per square foot, for a total cost of approximately \$10,525.

Item in boldface indicates positive identification of LBP (>1 mg/cm<sup>2</sup>).

>	Greater than
mg/cm <sup>2</sup>	Milligrams per square centimeter
LBP	Lead-based paint
NA	Not applicable
No.	Number
SF	Square feet
XRF	X-ray fluorescence

## 8.0 PCB FINDINGS

The laboratory report in Appendix E conveys analytical results from bulk samples of suspect PCB-containing caulk materials, and results are summarized in Table 3 below.

**TABLE 3**  
**SUMMARY OF PCB FINDINGS**  
**MEAD HANSEN BUILDING**

Figure Key	Sample ID	Material Description	Material Locations	Analyte Description	Analytical Result (ppm)
<b>Exterior</b>					
62	C4-1	Grey Expansion Caulk	East Side of Exterior Building	ND	ND
63	C4-2	Grey Expansion Caulk	East Side of Exterior Building	ND	ND
64	C4-3	Grey Expansion Caulk	East Side of Exterior Building	ND	ND
65	DC2-1	Door Caulk	By East Door	ND	ND
66	DC2-2	Door Caulk	By East Door	ND	ND
67	DC2-3	Door Caulk	By East Door	ND	ND
68	C1-1	Expansion Caulk	Southwest Corner of Building	ND	ND
69	C1-1	Expansion Caulk	Southwest Corner of Building	ND	ND
70	C1-1	Expansion Caulk	Southwest Corner of Building	ND	ND

Notes:

Item in boldface indicates positive identification of PCBs in the caulking material sample.

ID Identification  
 ND Not detected  
 PCB Polychlorinated biphenyl  
 ppm Parts per million

## 9.0 RECOMMENDATIONS

Based on survey observations and sample analytical results, Tetra Tech recommends the actions summarized below before demolition or renovation of the building surveyed on the Site.

### 9.1 ACBM

- Regulated ACM was identified in the 9" X 9" tan floor tile (approximately 20 square feet [ft<sup>2</sup>]) at the south entrance stairs. The floor tile was represented by samples FT-1, -2, and -3. Laboratory results indicated that the floor tile contained 2 percent chrysotile asbestos.
- Regulated ACM was identified in the square pattern linoleum (approximately 50 ft<sup>2</sup>) at the east entryway. The linoleum was represented by samples LIN-1, -2, and -3. Laboratory results indicated that the linoleum contained 15 percent chrysotile asbestos.
- Regulated ACM was identified in the exterior boiler insulation (approximately 150 ft<sup>2</sup>) at the basement on the south boiler. The insulation was represented by samples IN-1, -2, -3. Laboratory results indicated that the insulation contained 10 percent chrysotile asbestos.
- Regulated ACM was identified in the transite panels (approximately 430 ft<sup>2</sup>) on the east side of the exterior of the building. The transite was represented by samples Transite-1, -2, -3. Laboratory results indicated that the transite panels contained 20 percent chrysotile asbestos.
- Regulated ACM was identified in the exterior wall panel mastic (approximately 150 ft<sup>2</sup>) on the east side of the exterior of the building under the plastic panels. The mastic was represented by samples WM1-1, -2, -3. Laboratory results indicated that the mastic contained 10 percent chrysotile asbestos.
- Regulated ACM was identified in the airocell pipe insulation (approximately 530 ft<sup>2</sup>) in the basement and manufacturing area. The airocell pipe insulation was represented by samples Airocell-1, -2, -3. Laboratory results indicated that the airocell pipe insulation contained 30 percent chrysotile asbestos.
- Regulated ACM was identified in the piping joint insulation (approximately 12" joint) in the basement. The joint insulation was represented by samples J-1, -2, -3. Laboratory results indicated that the joint insulation contained 30 percent chrysotile asbestos.

The materials identified above should be removed by a licensed asbestos abatement contractor before any demolition or renovation work disturbs the material. The removed waste must be transported to a disposal site able to accept friable and non-friable ACM. If the building is to be renovated and the material is not to be disturbed, it may remain in place.

## 9.2 LBP

Of the 72 XRF readings obtained from painted surfaces and suspect lead-containing materials in the building on the Site, nine indicated reportable lead concentrations exceeding 1.0 mg/cm<sup>2</sup>:

- The tan painted wood door frame in the south/front entryway office tested positive for LBP with an XRF reading of 5.0 mg/cm<sup>2</sup>.
- The blue painted wood door in the south/front entryway office tested positive for LBP with an XRF reading of 5.0 mg/cm<sup>2</sup>.
- The blue painted wood door in the men's bathroom in the manufacturing area tested positive for LBP with an XRF reading of 1.01 mg/cm<sup>2</sup>.
- The blue painted wood garage door of the interior of the manufacturing area tested positive for LBP with an XRF reading of 1.05 mg/cm<sup>2</sup>.
- The cream-painted exterior garage door frame on the south side of the building tested positive for LBP with XRF readings of 2.14 mg/cm<sup>2</sup> and 2.46 mg/cm<sup>2</sup>.
- Green-painted panels on the northeast exterior of the building tested positive for LBP with an XRF readings of 4.13, 1.84, and 2.20 mg/cm<sup>2</sup>.

HUD considers LBP as paint with lead levels above 1.0 mg/cm<sup>2</sup>. If demolition or renovation will or could impact the LBP surfaces, Tetra Tech recommends that the contractor conducting the demolition or renovation comply with Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, Title 29 of *Code of Federal Regulations* (CFR), Part 1926.62. If the materials containing LBP are removed during demolition or renovation activities, a sample should be collected from the debris pile for a Toxicity Characteristic Leaching Procedure (TCLP) analysis (Title 40 CFR 261.24); representative samples should be collected and analyzed for all eight metals specified in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). This would allow determination of the proper method of disposal of the materials. Prior to demolition or renovation, the demolition or renovation contractor should remove peeling and chipping paint from any damaged LBP surfaces on the walls at the Site's building.

## 9.3 PCBs

None of the materials sampled were found to contain PCBs.

Prior to any demolition or renovation activities, any suspect materials not tested that would be disturbed should either be tested or assumed positive for PCBs, removed, and sent for disposal. Disposal of PCBs

is regulated by EPA under the Toxic Substances Control Act (TSCA) PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, Title 40 CFR 761.62.



## **10.0 ASSUMPTIONS AND DEVIATIONS**

Due to poor structural integrity of the building, the sampling team had limited access to parts of the building. Additional suspect ACMs not detected may be present in walls, voids, roof materials, or other concealed areas. Suspect asbestos-containing fire doors were identified in the building. To preserve the integrity of these materials, no samples of these materials were collected. Tetra Tech recommends that if the suspect asbestos-containing fire doors are to be disturbed during renovation or during demolition, these materials should be sampled to determine their asbestos content.

## **11.0 REFERENCES**

U.S. Department of Housing and Urban Development (HUD). 1997. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

U.S. Geological Survey (USGS). 1997. St. Joseph North, Missouri Quadrangle. USGS 7.5-Minute Topographic Series.

**APPENDIX A**  
**FIGURES**



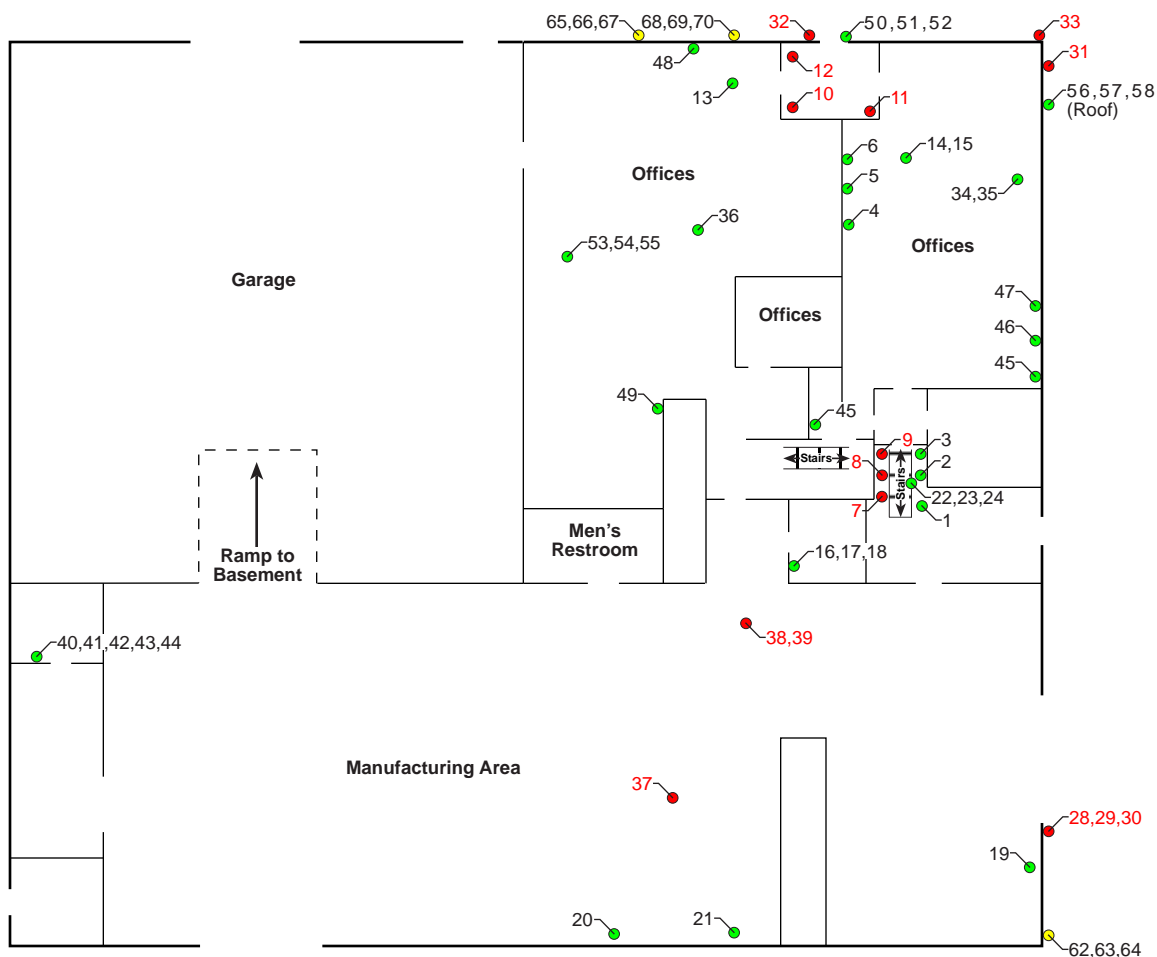




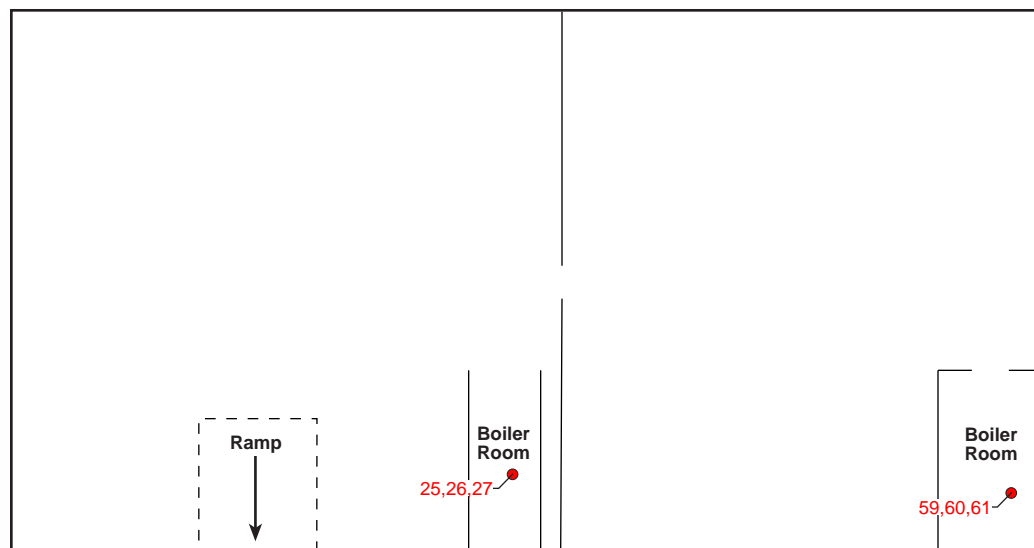
Sample Key Table

Key	Sample No.
Asbestos	
1	CT1-1
2	CT1-2
3	CT1-3
4	WM-1
5	WM-2
6	WM-3
7	FT-1
8	FT-2
9	FT-3
10	LIN-1
11	LIN-2
12	LIN-3
13	TERR-1
14	TERR-2
15	TERR-3
16	WG-1
17	WG-2
18	WG-3
19	WG1-1
20	WG1-2
21	WG1-3
22	FT1-1
23	FT1-2
24	FT1-3
25	IN-1
26	IN-2
27	IN-3
28	Transite-1
29	Transite-2
30	Transite-3
31	WM1-1
32	WM1-2
33	WM1-3
34	CT-1
35	CT-2
36	CT-3
37	Airocell-1
38	Airocell-2
39	Airocell-3
40	DW-1
41	DW-2
42	DW-3
43	DW-4
44	DW-5
45	PLSC-1
46	PLSC-2
47	PLSC-3
48	PLSC-4
49	PLSC-5
50	DC-1
51	DC-2
52	DC-3
53	PLS-1
54	PLS-2
55	PLS-3
56	RM-1
57	RM-2
58	RM-3
59	J-1
60	J-2
61	J-3
62	C4-1
63	C4-2
64	C4-3
65	DC-2-1
66	DC-2-2
67	DC-2-3
68	C1-1
69	C1-2
70	C1-3

## First Floor



## Basement



## Legend

- ACM Sample Location
  - Non-ACM Sample Location
  - Non-ACM and Non-PCB Sample Location
- ACM Asbestos Containing Material  
PCB Polychlorinated Biphenyl



Not to Scale

Mead Hansen Building  
408 S 8th Street  
St. Joseph, Missouri

**Figure 2**  
Asbestos Sample Location Map



Date: 1/31/18

Drawn By: Nick Wiederholt

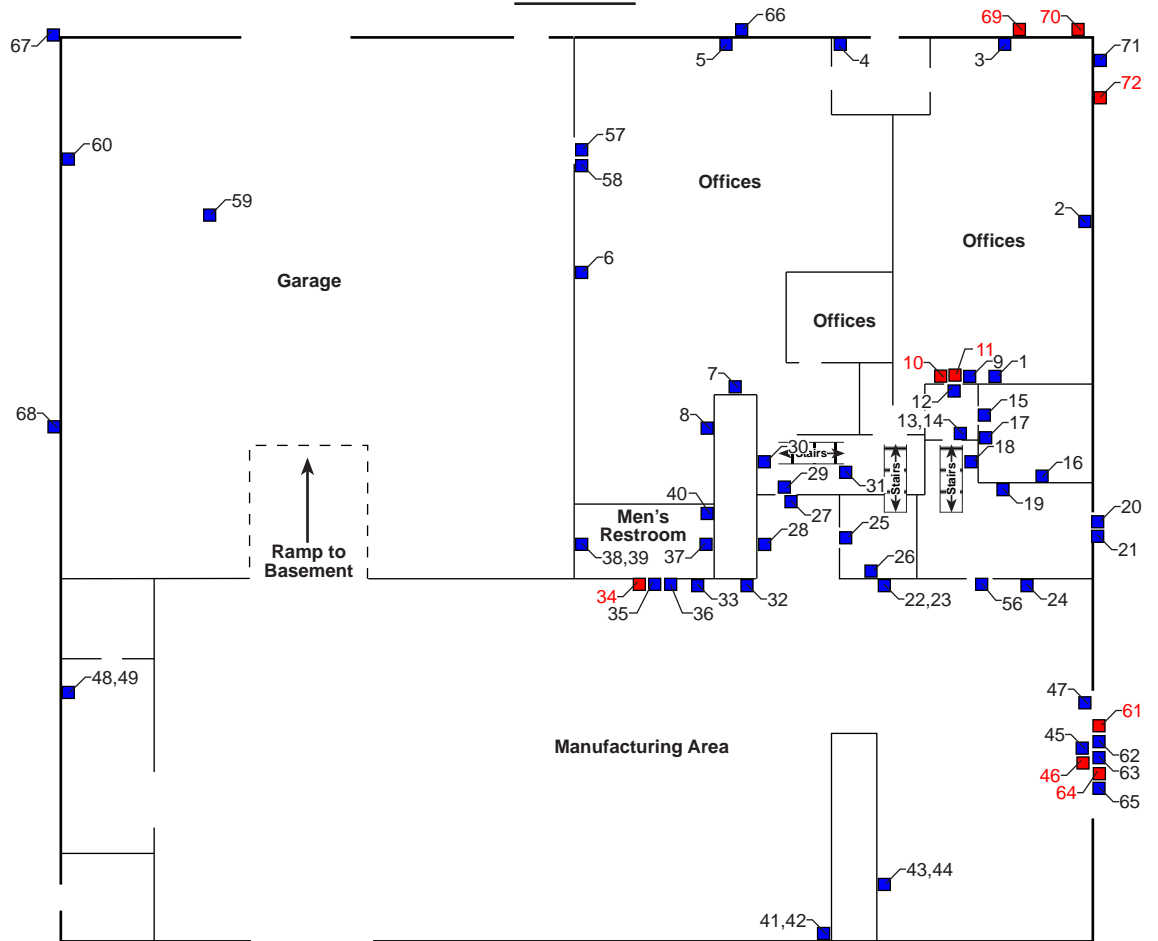
Project No: X9025.14.0002.043

Note: Refer to Sample Key Table for corresponding sample numbers.

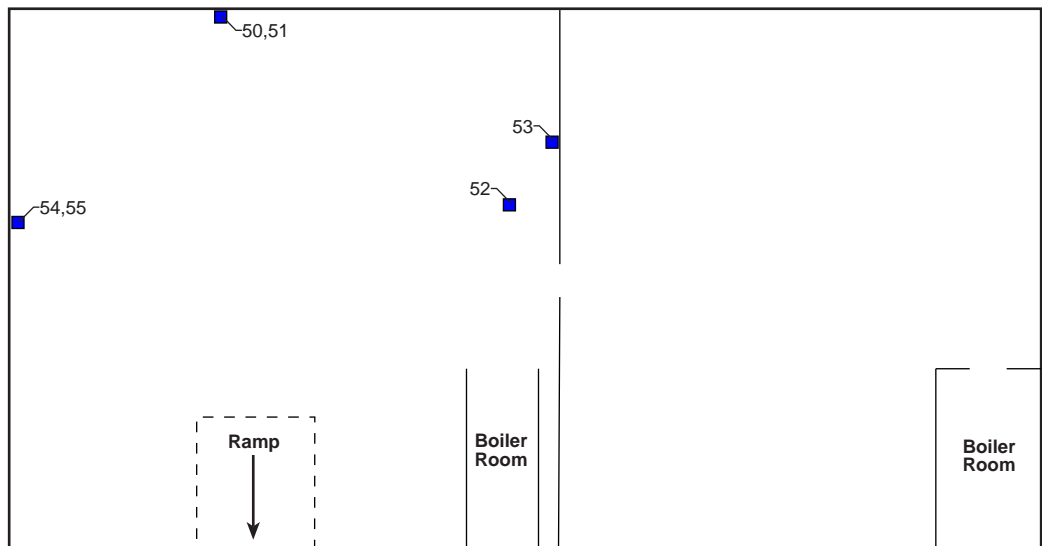
Sample Key Table

Sample No.
Lead
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
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29
30
31
32
33
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36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72

## First Floor



## Basement



### Legend

- LBP Containing Material Sample Location
- Non-LBP Containing Material Sample Location

LBP Lead-based Paint



Not to Scale

Mead Hansen Building  
408 S 8th Street  
St. Joseph, Missouri

**Figure 3**  
LBP Sample Location Map



Note: Refer to Sample Key Table for corresponding sample numbers.

Date: 1/31/18

Drawn By: Nick Wiederholt

Project No: X9025.14.0002.043

**APPENDIX B**  
**INSPECTOR CERTIFICATIONS**

Expiration Date **2/2/2018**

Certificate Number: 7011020217MOIR17534

Training Date: **2/2/2017**

**Missouri State Certificate for Asbestos Related Occupations**

issued by Department of Natural Resources

P.O. Box 176

Jefferson City, MO 65102

Phone (573) 751-4817

**Megan B Sawyer**

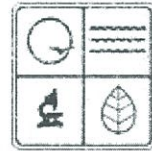
has successfully completed the requirements for certification as a INSPECTOR. This Missouri State Certification is subject to review and the director may deny, suspend or revoke the certification per RSMo chapter 643.230.

3/6/2017

Date

*Kyra L Moore*

Director of Air Pollution Control Program





**STATE OF MISSOURI**  
**DEPARTMENT OF HEALTH AND SENIOR SERVICES**

**LEAD OCCUPATION LICENSE REGISTRATION**

Issued to:

**Megan B. Sawyer**

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

**Lead Inspector**  
Category of License

Issuance Date: **6/12/2017**  
Expiration Date: **6/12/2019**  
License Number: **150427-300004651**



A handwritten signature in black ink, appearing to read "Randall W. Williams", is located in the bottom right area of the certificate.

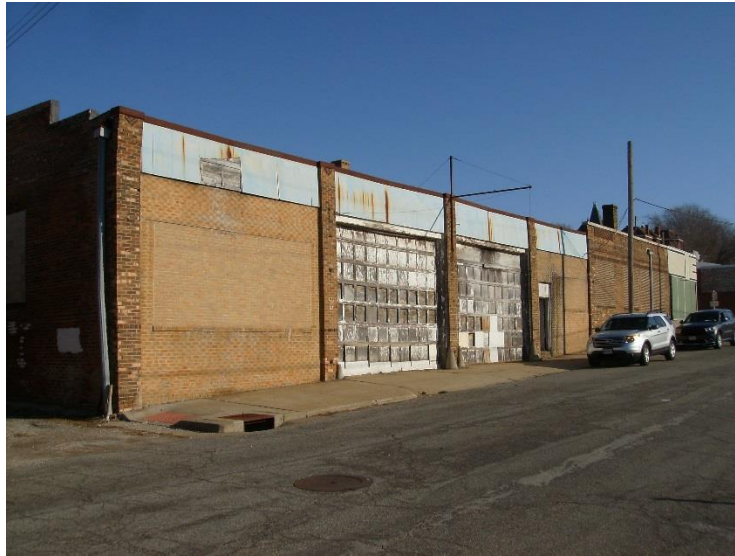
Randall W. Williams, MD, FACOG  
Director  
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102



**APPENDIX C**  
**PHOTOGRAPHIC DOCUMENTATION**

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: South	DESCRIPTION	This photograph shows the exterior of the building.	1
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: West	DESCRIPTION	This photograph shows the exterior of building and transite underneath the black paneling.	2
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: East	DESCRIPTION	This photograph shows blue transite paneling and the garage door on the exterior of the building.	3
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: South	DESCRIPTION	This photograph shows 12" joint insulation on the south boiler in the basement.	4
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Southwest	<b>DESCRIPTION</b>	This photograph shows 3" airocell pipe insulation in the basement.	5
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: North	<b>DESCRIPTION</b>	This photograph shows window glaze in the manufacturing area.	6
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: East	DESCRIPTION	This photograph shows brown floor tile near the south entrance.	7
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017



TETRA TECH PROJECT NO. 103X9025140002.043  Direction: West	DESCRIPTION	This photograph shows 9" X 9" floor tile with associated mastic on the south entrance stairs.	8
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
	PHOTOGRAPHER	M. Sawyer	12/19/2017

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: West	<b>DESCRIPTION</b>	This photograph shows the plaster system and 2" X 4" fissure and pinhole ceiling tile in the office.	9
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Northeast	<b>DESCRIPTION</b>	This photograph shows square pattern linoleum with associated mastic at the south entrance.	10
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Northwest	<b>DESCRIPTION</b>	This photograph shows 2' X 4" white fissure and pinhole ceiling tile, and 1' X 4' smooth ceiling tile in the office.	11
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Southwest	<b>DESCRIPTION</b>	This photograph shows the north side office area.	12
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Northwest	<b>DESCRIPTION</b>	This photograph shows an overview of the manufacturing area.	13
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Southwest	<b>DESCRIPTION</b>	This photograph shows the basement boiler.	14
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017

**Mead Hansen Building Asbestos/Lead-Based Paint Survey  
St. Joseph, Missouri**



<b>TETRA TECH PROJECT NO.</b> 103X9025140002.043  Direction: Northwest	<b>DESCRIPTION</b>	This photograph shows deteriorated boiler insulation.	15
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	M. Sawyer	12/19/2017

## **APPENDIX D**

### **LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS FOR SAMPLES SUSPECTED TO CONTAIN ACBM**



Report for:

**John Simpson**  
**Tetra Tech-KCMO**  
415 Oak Street  
Kansas City, MO 64106

---

Regarding: Project: 103X9025140002.043; Mead Hanson Building  
EML ID: 1851604

Approved by:

Approved Signatory  
Charlene Kingston

Dates of Analysis:  
Asbestos PLM: 12-22-2017

Service SOPs: Asbestos PLM (EPA Methods 600/R-93/116 & 600/M4-82-020, SOP EM-AS-S-1267)

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All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the items tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Tetra Tech-KCMO

Date of Sampling: 12-19-2017

C/O: John Simpson

Date of Receipt: 12-20-2017

Re: 103X9025140002.043; Mead Hanson Building

Date of Report: 12-22-2017

**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Total Samples Submitted:** 61**Total Samples Analyzed:** 48**Total Samples with Layer Asbestos Content > 1%:** 7**Location: CT1-1, Smooth 1x4 ceiling tile**

Lab ID-Version‡: 8678384-1

Sample Layers	Asbestos Content
Brown Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: CT1-2, Smooth 1x4 ceiling tile**

Lab ID-Version‡: 8678385-1

Sample Layers	Asbestos Content
Brown Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: CT1-3, Smooth 1x4 ceiling tile**

Lab ID-Version‡: 8678386-1

Sample Layers	Asbestos Content
Brown Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: WM-1, Wood wall panel mastic**

Lab ID-Version‡: 8678387-1

Sample Layers	Asbestos Content
Brown Mastic	ND
<b>Sample Composite Homogeneity:</b>	Good

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMLab P&K reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Tetra Tech-KCMO

Date of Sampling: 12-19-2017

C/O: John Simpson

Date of Receipt: 12-20-2017

Re: 103X9025140002.043; Mead Hanson Building

Date of Report: 12-22-2017

**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: WM-2, Wood wall panel mastic**

Lab ID-Version‡: 8678388-1

Sample Layers	Asbestos Content
Brown Mastic	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: WM-3, Wood wall panel mastic**

Lab ID-Version‡: 8678389-1

Sample Layers	Asbestos Content
Brown Mastic	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: FT-1, 9x9 tan floor tile with mastic**

Lab ID-Version‡: 8678390-1

Sample Layers	Asbestos Content
Black Mastic	ND
Brown Floor Tile	2% Chrysotile
<b>Sample Composite Homogeneity:</b>	Moderate

**Comments:** Samples FT-2 and FT-3 were not analyzed due to prior positive series.**Location: LIN-1, Square pattern, tan linoleum**

Lab ID-Version‡: 8678393-1

Sample Layers	Asbestos Content
Yellow Mastic	ND
Tan Linoleum with Fibrous Backing	15% Chrysotile
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Comments:** Samples LIN-2 and LIN-3 were not analyzed due to prior positive series.

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Client: Tetra Tech-KCMO

C/O: John Simpson

Re: 103X9025140002.043; Mead Hanson Building

Date of Sampling: 12-19-2017

Date of Receipt: 12-20-2017

Date of Report: 12-22-2017

**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: Terr-1, White with color pattern terrazzo**

Lab ID-Version‡: 8678396-1

Sample Layers	Asbestos Content
White Non-Fibrous Material with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: Terr-2, White with color pattern terrazzo**

Lab ID-Version‡: 8678397-1

Sample Layers	Asbestos Content
White Non-Fibrous Material with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: Terr-3, White with color pattern terrazzo**

Lab ID-Version‡: 8678398-1

Sample Layers	Asbestos Content
White Non-Fibrous Material with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: WG-1, Blue painted window glaze**

Lab ID-Version‡: 8678399-1

Sample Layers	Asbestos Content
Brown Window Glazing with Paint	ND
<b>Sample Composite Homogeneity:</b>	Moderate

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C/O: John Simpson

Re: 103X9025140002.043; Mead Hanson Building

Date of Sampling: 12-19-2017

Date of Receipt: 12-20-2017

Date of Report: 12-22-2017

**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: WG-2, Blue painted window glaze**

Lab ID-Version‡: 8678400-1

Sample Layers	Asbestos Content
Brown Window Glazing with Paint	ND
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: WG-3, Blue painted window glaze**

Lab ID-Version‡: 8678401-1

Sample Layers	Asbestos Content
Brown Window Glazing with Paint	ND
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: WG1-1, White window glaze**

Lab ID-Version‡: 8678402-1

Sample Layers	Asbestos Content
White Window Glazing	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: WG1-2, White window glaze**

Lab ID-Version‡: 8678403-1

Sample Layers	Asbestos Content
White Window Glazing	ND
<b>Sample Composite Homogeneity:</b>	Good

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: WG1-3, White window glaze**

Lab ID-Version‡: 8678404-1

Sample Layers	Asbestos Content
White Window Glazing	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: FT1-1, Stair floor tile**

Lab ID-Version‡: 8678405-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Brown Vapor Barrier	ND
Brown Floor Tile	ND
<b>Composite Non-Asbestos Content:</b>	50% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

**Location: FT1-2, Stair floor tile**

Lab ID-Version‡: 8678406-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Brown Vapor Barrier	ND
Brown Floor Tile	ND
<b>Composite Non-Asbestos Content:</b>	50% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

**Location: FT1-3, Stair floor tile**

Lab ID-Version‡: 8678407-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Brown Vapor Barrier	ND
Brown Floor Tile	ND
<b>Composite Non-Asbestos Content:</b>	50% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: IN-1, Boiler insulation**

Lab ID-Version‡: 8678408-1

Sample Layers	Asbestos Content
Gray Insulation	10% Chrysotile
<b>Composite Non-Asbestos Content:</b>	20% Glass Fibers
<b>Sample Composite Homogeneity:</b>	Good

**Comments:** Samples IN-2 and IN3 were not analyzed due to prior positive series.**Location: Transite-1, Transite, exterior panels**

Lab ID-Version‡: 8678411-1

Sample Layers	Asbestos Content
Gray Transite with Paint	20% Chrysotile
<b>Sample Composite Homogeneity:</b>	Moderate

**Comments:** Samples Transite-2 and Transite-3 were not analyzed due to prior positive series.**Location: WM1-1, Exterior wall panel mastic**

Lab ID-Version‡: 8678414-1

Sample Layers	Asbestos Content
Brown Non-Fibrous Material with Paint	ND
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: WM1-2, Exterior wall panel mastic**

Lab ID-Version‡: 8678415-1

Sample Layers	Asbestos Content
Black Mastic	10% Chrysotile
Brown Non-Fibrous Material with Paint	ND
<b>Sample Composite Homogeneity:</b>	Poor

**Comments:** Sample WM1-3 was not analyzed due to prior positive series.

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: Airocell-1, Airocell pipe wrap**

Lab ID-Version‡: 8678417-1

Sample Layers	Asbestos Content
Gray Wrap	30% Chrysotile
<b>Composite Non-Asbestos Content:</b>	60% Cellulose
<b>Sample Composite Homogeneity:</b>	Good

Comments: Samples Airocell-2 and 3 were not analyzed due to prior positive series.

**Location: DW-1, Drywall**

Lab ID-Version‡: 8678420-1

Sample Layers	Asbestos Content
White Drywall	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: DW-2, Drywall**

Lab ID-Version‡: 8678421-1

Sample Layers	Asbestos Content
White Drywall	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: DW-3, Drywall**

Lab ID-Version‡: 8678422-1

Sample Layers	Asbestos Content
White Drywall	ND
<b>Sample Composite Homogeneity:</b>	Good

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: DW-4, Drywall**

Lab ID-Version‡: 8678423-1

Sample Layers	Asbestos Content
White Drywall with Brown Paper	ND
<b>Composite Non-Asbestos Content:</b>	10% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: DW-5, Drywall**

Lab ID-Version‡: 8678424-1

Sample Layers	Asbestos Content
White Drywall with Brown Paper	ND
<b>Composite Non-Asbestos Content:</b>	10% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: PLSC-1, Plaster system with skim coat**

Lab ID-Version‡: 8678425-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
White Skim Coat with Paint	ND
<b>Sample Composite Homogeneity:</b>	Poor

**Location: PLSC-2, Plaster system with skim coat**

Lab ID-Version‡: 8678426-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
White Skim Coat with Paint	ND
<b>Sample Composite Homogeneity:</b>	Poor

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: PLSC-3, Plaster system with skim coat**

Lab ID-Version‡: 8678427-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
White Skim Coat with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b> Poor	

**Location: PLSC-4, Plaster system with skim coat**

Lab ID-Version‡: 8678428-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
White Skim Coat with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b> Poor	

**Location: PLSC-5, Plaster system with skim coat**

Lab ID-Version‡: 8678429-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
White Skim Coat with Paint	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b> Poor	

**Location: DC-1, Door caulk**

Lab ID-Version‡: 8678430-1

Sample Layers	Asbestos Content
Gray Caulk	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b> Good	

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: DC-2, Door caulk**

Lab ID-Version‡: 8678431-1

Sample Layers	Asbestos Content
Gray Caulk	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b>	Good

**Location: DC-3, Door caulk**

Lab ID-Version‡: 8678432-1

Sample Layers	Asbestos Content
Gray Caulk	< 1% Chrysotile
<b>Sample Composite Homogeneity:</b>	Good

**Location: PLS-1, Ceiling plaster system**

Lab ID-Version‡: 8678433-1

Sample Layers	Asbestos Content
White Plaster	ND
Brown Fibrous Material with Paint	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

**Location: PLS-2, Ceiling plaster system**

Lab ID-Version‡: 8678434-1

Sample Layers	Asbestos Content
White Plaster	ND
Brown Fibrous Material with Paint	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: PLS-3, Ceiling plaster system**

Lab ID-Version‡: 8678435-1

Sample Layers	Asbestos Content
White Plaster	ND
Brown Fibrous Material with Paint	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Poor

**Location: RM-1, Roofing material**

Lab ID-Version‡: 8678436-1

Sample Layers	Asbestos Content
Black Roofing Material	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Good

**Location: RM-2, Roofing material**

Lab ID-Version‡: 8678437-1

Sample Layers	Asbestos Content
Black Roofing Material	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Good

**Location: RM-3, Roofing material**

Lab ID-Version‡: 8678438-1

Sample Layers	Asbestos Content
Black Roofing Material	ND
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Good

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C/O: John Simpson

Re: 103X9025140002.043; Mead Hanson Building

Date of Sampling: 12-19-2017

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: J-1, Small joint, boiler**

Lab ID-Version‡: 8678439-1

Sample Layers	Asbestos Content
Gray Insulation	30% Chrysotile
<b>Composite Non-Asbestos Content:</b>	15% Cellulose
<b>Sample Composite Homogeneity:</b>	Good

Comments: Samples J-2 and J-3 were not analyzed due to prior positive series.

**Location: CT-1, 2x4 fissure and pinhole ceiling tile**

Lab ID-Version‡: 8678442-1

Sample Layers	Asbestos Content
Gray Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: CT-2, 2x4 fissure and pinhole ceiling tile**

Lab ID-Version‡: 8678443-1

Sample Layers	Asbestos Content
Gray Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

**Location: CT-3, 2x4 fissure and pinhole ceiling tile**

Lab ID-Version‡: 8678444-1

Sample Layers	Asbestos Content
Gray Ceiling Tile with White Surface	ND
<b>Composite Non-Asbestos Content:</b>	90% Cellulose
<b>Sample Composite Homogeneity:</b>	Moderate

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Report for:

**John Simpson**  
**Tetra Tech-KCMO**  
415 Oak Street  
Kansas City, MO 64106

---

Regarding: Project: 103X9025140002.043; Mead Hanson Building  
EML ID: 1851628

Approved by:

Dates of Analysis:  
Asbestos PLM: 12-21-2017

Approved Signatory  
Noah Lazarte

Service SOPs: Asbestos PLM (EPA Methods 600/R-93/116 & 600/M4-82-020, SOP EM-AS-S-1267)

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All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the items tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Tetra Tech-KCMO

C/O: John Simpson

Re: 103X9025140002.043; Mead Hanson Building

Date of Sampling: 12-19-2017

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Total Samples Submitted:** 9**Total Samples Analyzed:** 9**Total Samples with Layer Asbestos Content > 1%:** 0**Location: C4-1, Exterior, East side, expansion caulk**

Lab ID-Version‡: 8677128-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: C4-2, Exterior, East side, expansion caulk**

Lab ID-Version‡: 8677129-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: C4-3, Exterior, East side, expansion caulk**

Lab ID-Version‡: 8677130-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: DC2-1, East door caulk, white door**

Lab ID-Version‡: 8677131-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: DC2-2, East door caulk, white door**

Lab ID-Version‡: 8677132-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

**Location: DC2-3, East door caulk, white door**

Lab ID-Version‡: 8677133-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b>	Good

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**ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116****Location: C1-1, SW corner of building, expansion caulk**

Lab ID-Version‡: 8677134-1

Sample Layers	Asbestos Content
Gray Caulk	ND
Gray Cementitious Material	ND
<b>Sample Composite Homogeneity:</b> Moderate	

**Location: C1-2, SW corner of building, expansion caulk**

Lab ID-Version‡: 8677135-1

Sample Layers	Asbestos Content
Gray Caulk	ND
Gray Cementitious Material	ND
<b>Sample Composite Homogeneity:</b> Moderate	

**Location: C1-3, SW corner of building, expansion caulk**

Lab ID-Version‡: 8677136-1

Sample Layers	Asbestos Content
Gray Caulk	ND
<b>Sample Composite Homogeneity:</b> Good	

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMLab P&K reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

## **APPENDIX E**

### **LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS FOR SAMPLES ANALYZED FOR PCBs**

January 02, 2018

Emily Fisher  
TETRA TECH EMI  
415 Oak  
Kansas City, MO 64106

RE: Project: Mead Hansen Building Site  
Pace Project No.: 60260855

Dear Emily Fisher:

Enclosed are the analytical results for sample(s) received by the laboratory on December 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jeffrey Shopper  
jeff.shopper@pacelabs.com  
1(913)563-1408  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Mead Hansen Building Site

Pace Project No.: 60260855

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### Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: MN00064

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon NwTPH Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DW Certification #: 9952 C

West Virginia DEP Certification #: 382

Wisconsin Certification #: 999407970

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Mead Hansen Building Site

Pace Project No.: 60260855

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60260855001	CAULK-1	Solid	12/18/17 12:30	12/20/17 11:20
60260855002	CAULK-2	Solid	12/18/17 14:00	12/20/17 11:20
60260855003	CAULK-3	Solid	12/18/17 14:15	12/20/17 11:20
60260855004	CAULK-4	Solid	12/18/17 14:30	12/20/17 11:20

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: Mead Hansen Building Site

Pace Project No.: 60260855

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60260855001	CAULK-1	EPA 8082A	SNG	12	PASI-M
60260855002	CAULK-2	EPA 8082A	SNG	12	PASI-M
60260855003	CAULK-3	EPA 8082A	SNG	12	PASI-M
60260855004	CAULK-4	EPA 8082A	SNG	12	PASI-M

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Mead Hansen Building Site

Pace Project No.: 60260855

**Sample: CAULK-1**      **Lab ID: 60260855001**      Collected: 12/18/17 12:30      Received: 12/20/17 11:20      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082A GCS PCB</b> Analytical Method: EPA 8082A      Preparation Method: EPA 3540C								
PCB-1016 (Aroclor 1016)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	11100-14-4	
PCB, Total	ND	ug/kg	1650	10	12/22/17 15:00	12/28/17 09:57	1336-36-3	
<b>Surrogates</b>								
Tetrachloro-m-xylene (S)	0	%.	65-125	10	12/22/17 15:00	12/28/17 09:57	877-09-8	D3,S4
Decachlorobiphenyl (S)	0	%.	75-125	10	12/22/17 15:00	12/28/17 09:57	2051-24-3	S4

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Mead Hansen Building Site

Pace Project No.: 60260855

**Sample: CAULK-2**      **Lab ID: 60260855002**      Collected: 12/18/17 14:00      Received: 12/20/17 11:20      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082A GCS PCB</b> Analytical Method: EPA 8082A      Preparation Method: EPA 3540C								
PCB-1016 (Aroclor 1016)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	11100-14-4	
PCB, Total	ND	ug/kg	1710	10	12/22/17 15:00	12/28/17 10:28	1336-36-3	
<b>Surrogates</b>								
Tetrachloro-m-xylene (S)	0	%.	65-125	10	12/22/17 15:00	12/28/17 10:28	877-09-8	D3,S4
Decachlorobiphenyl (S)	0	%.	75-125	10	12/22/17 15:00	12/28/17 10:28	2051-24-3	S4

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Mead Hansen Building Site

Pace Project No.: 60260855

**Sample: CAULK-3**      **Lab ID: 60260855003**      Collected: 12/18/17 14:15      Received: 12/20/17 11:20      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082A GCS PCB</b> Analytical Method: EPA 8082A      Preparation Method: EPA 3540C								
PCB-1016 (Aroclor 1016)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	11100-14-4	
PCB, Total	ND	ug/kg	4120	10	12/22/17 15:00	12/28/17 10:58	1336-36-3	
<b>Surrogates</b>								
Tetrachloro-m-xylene (S)	0	%.	65-125	10	12/22/17 15:00	12/28/17 10:58	877-09-8	D3,S4
Decachlorobiphenyl (S)	0	%.	75-125	10	12/22/17 15:00	12/28/17 10:58	2051-24-3	S4

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## ANALYTICAL RESULTS

Project: Mead Hansen Building Site

Pace Project No.: 60260855

**Sample: CAULK-4**      **Lab ID: 60260855004**      Collected: 12/18/17 14:30      Received: 12/20/17 11:20      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082A GCS PCB</b> Analytical Method: EPA 8082A      Preparation Method: EPA 3540C								
PCB-1016 (Aroclor 1016)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	11100-14-4	
PCB, Total	ND	ug/kg	165	1	12/22/17 15:00	12/28/17 11:29	1336-36-3	
<b>Surrogates</b>								
Tetrachloro-m-xylene (S)	74	%.	65-125	1	12/22/17 15:00	12/28/17 11:29	877-09-8	
Decachlorobiphenyl (S)	290	%.	75-125	1	12/22/17 15:00	12/28/17 11:29	2051-24-3	S3

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: Mead Hansen Building Site

Pace Project No.: 60260855

QC Batch: 515252 Analysis Method: EPA 8082A  
QC Batch Method: EPA 3540C Analysis Description: 8082A GCS PCB  
Associated Lab Samples: 60260855001, 60260855002, 60260855003, 60260855004

METHOD BLANK: 2801704 Matrix: Solid  
Associated Lab Samples: 60260855001, 60260855002, 60260855003, 60260855004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	198	12/28/17 08:56	
PCB-1221 (Aroclor 1221)	ug/kg	ND	198	12/28/17 08:56	
PCB-1232 (Aroclor 1232)	ug/kg	ND	198	12/28/17 08:56	
PCB-1242 (Aroclor 1242)	ug/kg	ND	198	12/28/17 08:56	
PCB-1248 (Aroclor 1248)	ug/kg	ND	198	12/28/17 08:56	
PCB-1254 (Aroclor 1254)	ug/kg	ND	198	12/28/17 08:56	
PCB-1260 (Aroclor 1260)	ug/kg	ND	198	12/28/17 08:56	
PCB-1262 (Aroclor 1262)	ug/kg	ND	198	12/28/17 08:56	
PCB-1268 (Aroclor 1268)	ug/kg	ND	198	12/28/17 08:56	
Decachlorobiphenyl (S)	%.	84	75-125	12/28/17 08:56	
Tetrachloro-m-xylene (S)	%.	76	65-125	12/28/17 08:56	

LABORATORY CONTROL SAMPLE & LCSD: 2801705

Parameter	Units	2801706								Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	
PCB-1016 (Aroclor 1016)	ug/kg	4000	3170	2870	79	72	48-125	10	20	
PCB-1260 (Aroclor 1260)	ug/kg	4000	3600	3310	90	83	63-125	9	20	
Decachlorobiphenyl (S)	%.				87	86	75-125			
Tetrachloro-m-xylene (S)	%.				76	71	65-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Mead Hansen Building Site  
Pace Project No.: 60260855

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
TNTC - Too Numerous To Count  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### WORKORDER QUALIFIERS

WO: 60260855

[1] The samples were received outside of required temperature range. Analysis was completed upon client approval.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.  
S3 Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.  
S4 Surrogate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Mead Hansen Building Site


Pace Project No.: 60260855


Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60260855001	CAULK-1	EPA 3540C	515252	EPA 8082A	515663
60260855002	CAULK-2	EPA 3540C	515252	EPA 8082A	515663
60260855003	CAULK-3	EPA 3540C	515252	EPA 8082A	515663
60260855004	CAULK-4	EPA 3540C	515252	EPA 8082A	515663

## REPORT OF LABORATORY ANALYSIS

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	Document Name: <b>Sample Condition Upon Receipt Form</b>	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: <b>F-MN-L-213-rev.22</b>	Issuing Authority: Pace Minnesota Quality Office

<b>Sample Condition Upon Receipt</b>	Client Name: <u>Tetra Tech EM1</u>	Project #: <b>WO# : 60260855</b>
		

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client  
☐ Commercial ☐ Pace ☐ SpeedDee ☐ Other: \_\_\_\_\_  
 Tracking Number: 7473 9943 1825

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No      Seals Intact? ☐ Yes ☒ No      Optional: Proj. Due Date:      Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other: PB      Temp Blank? ☐ Yes ☒ No

Thermometer ☒ 151401163      Type of Ice: ☐ Wet ☐ Blue ☒ None ☐ Dry ☐ Melted  
 Used: ☐ G87A9155100842

Cooler Temp Read (°C): 13.1      Cooler Temp Corrected (°C): 12.8      Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A  
 Temp should be above freezing to 6°C      Correction Factor: \_\_\_\_\_      Date and Initials of Person Examining Contents: MD 12/20/17

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	12. <u>no date/time on samples</u>
-Includes Date/Time/ID/Analysis Matrix: <u>SL: Caulk</u>		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH      Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed:      Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**CLIENT NOTIFICATION/RESOLUTION**

Field Data Required? ☐ Yes ☐ No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_

Project Manager Review: JWS

Date: 12/21/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Company:	Tetra Tech EMI	Report To:	Emily Fisher	Attention:											
Address:	415 Oak	Copy To:	john.simpson@tetratech.com	Company Name:											
	Kansas City, MO 64106			Address:											
Email To:	Emily.Fisher@tetratech.com	Purchase Order No.:		Pace Quote Reference:											
Phone:	(816) 412-1755	Project Name:	Mead Hansen Building Site	Pace Project Manager:	Jeffrey Shopper 913-563-1408										
Requested Due Date/AT:	Standard	Project Number:	103x9025140002.043	Pace Profile #:	970										
			<table border="1"> <tr> <td colspan="2"> <b>REGULATORY AGENCY</b> </td> </tr> <tr> <td> <input type="checkbox"/> NPDES         </td> <td> <input type="checkbox"/> GROUND WATER       </td> </tr> <tr> <td> <input type="checkbox"/> UST         </td> <td> <input type="checkbox"/> RCRA       </td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> DRINKING WATER       </td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> OTHER       </td> </tr> </table>			<b>REGULATORY AGENCY</b>		<input type="checkbox"/> NPDES	<input type="checkbox"/> GROUND WATER	<input type="checkbox"/> UST	<input type="checkbox"/> RCRA	<input type="checkbox"/> DRINKING WATER		<input type="checkbox"/> OTHER	
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<input type="checkbox"/> NPDES	<input type="checkbox"/> GROUND WATER														
<input type="checkbox"/> UST	<input type="checkbox"/> RCRA														
<input type="checkbox"/> DRINKING WATER															
<input type="checkbox"/> OTHER															
			<b>Site Location</b>	<b>STATE:</b>	MO										

[illegible]