TETRA TECH

April 9, 2020

Mr. Todd Davis
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Lenexa, Kansas 66219

**Subject: Analysis of Brownfields Cleanup Alternatives Report**
**Oak Street City Hall Site**
**Poplar Bluff, Butler County, Missouri**
**EPA Region 7, START 5, Contract No. 68HE0719D0001**
**Task Order No. 19F0101.005**
**Task Monitor: Todd Davis, Site Assessment Manager**

Dear Mr. Davis:

Tetra Tech, Inc. (Tetra Tech) is submitting the attached Analysis of Brownfields Cleanup Alternatives report regarding the Oak Street City Hall site in Poplar Bluff, Missouri. If you have any questions or comments pertaining to this submittal, please call the START Project Manager at (417) 257-9977.

Sincerely,

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START Project Manager

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Enclosures

cc: Randy Brown, EPA Applied Sciences Branch
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# ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES REPORT

## OAK STREET CITY HALL SITE
## POPLAR BLUFF, MISSOURI

**Superfund Technical Assessment and Response Team (START) 5**

**Contract No. 68HE0719D0001, Task Order No. 19F0101.005**

Prepared For:

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

April 9, 2020

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# 1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc. (Tetra Tech), under the Superfund Technical Assessment and Response Team (START) Contract (68HE0719D0001), to conduct an Analysis of Brownfields Cleanup Alternatives (ABCA) regarding the approximately 1.13-acre Oak Street City Hall site (the site) at 101 Oak Street, Poplar Bluff, Missouri (see Appendix A, Figure 1). The site is developed with an approximately 35,932-square-foot former hospital building, a 2,970-square-foot warehouse, a communications tower, and a paved parking area. The current owner, City of Poplar Bluff, has interest in demolishing the existing buildings on site. Future use of the site is unknown, but anticipated to remain commercial.

A Phase II Targeted Brownfields Assessment (TBA), completed by Tetra Tech, concluded that no further investigation and/or remediation of environmental media may be necessary at the site due to the following: (1) residential use is not planned at this site; (2) the property will not be a source of drinking water, as this is provided by the City's public water supply; and (3) concentrations of metals, especially arsenic, reported in unfiltered samples likely resulted partly from particulates in those samples and are likely attributable to natural occurrences of these metals (Tetra Tech 2020a). Section 3.0 of this ABCA discusses this further. Therefore, this ABCA presents cleanup alternatives regarding only asbestos-containing material (ACM), lead-based paint (LBP), and hazardous materials in site buildings. Cleanup alternatives considered are based on state and federal regulations. Missouri Department of Natural Resources (MDNR) regulations outline ACM and LBP inspection, reporting, and disposal requirements for demolition or renovation of commercial buildings (MDNR 2017). This ABCA also includes preliminary estimates of costs for evaluated cleanup alternatives.

## 2.0 SITE BACKGROUND AND DESCRIPTION

The City of Poplar Bluff owns the site. Historical documentation and information provided by the key site manager indicated that the site had been used as a hospital from at least as early as 1939 (according to the City Directory from that year) until 1975. No information could be found regarding use of the property after that date until 1986, when the City Directory listed Poplar Bluff Professional Beauty Academy, a neurological center, a physician's office, and Muzac Communication Systems as occupying the address. The City purchased the site in 1990 and thereafter utilized it as the location of City Hall, the police department, and municipal court until recent deteriorating conditions of the buildings forced relocations. The site is currently vacant.

The site is in a mixed-use commercial and residential area of Poplar Bluff, encompassing approximately 1.13 acres, and is developed with an approximately 35,932-square-foot former hospital building, a 2,970-square-foot warehouse, a communications tower, and a paved parking area. Figure 2 in Appendix A illustrates the location and boundaries of the site. The site is surrounded by commercial, municipal, and residential properties. The site and vicinity are depicted on the Poplar Bluff, Missouri, U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 1979) (see Appendix A, Figure 1). Coordinates at the approximate center of the site are 36.757705 degrees north latitude and 90.391054 degrees west longitude.

## 3.0 PREVIOUS INVESTIGATIONS

SCS Engineers (SCS) conducted a Phase I Environmental Site Assessment (ESA) of the site in July 2018 on behalf of MDNR, identifying the following recognized environmental condition (REC) (SCS 2018):

> Three pad-mounted transformers lacking labeling indicating absence of polychlorinated biphenyls (PCB), posing possibility that the transformers contained PCBs.

The Phase I ESA report also recommended a hazardous materials survey based on the age of the buildings and observations during the site reconnaissance (SCS 2018).

Tetra Tech conducted a Phase II TBA in October 2019 to confirm or eliminate the REC identified during the 2018 Phase I ESA by SCS (Tetra Tech 2020a). Samples of surface soil, subsurface soil, and groundwater were submitted for analyses for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), Resource Conservation and Recovery Act (RCRA) metals (not including mercury), total petroleum hydrocarbon (TPH) – gasoline-range organics (GRO), TPH – diesel-range organics (DRO), TPH – oil-range organics (ORO), and PCBs. Sampling results during this Phase II TBA indicated presence of contaminants in both soil and groundwater at the site. Sample locations are depicted on Figure 2 in Appendix A.

Several VOCs, SVOCs, and TPHs were detected in soil samples, but no detection exceeded an associated Missouri Risk-based Corrective Action (MRBCA) lowest default target level (LDTL) or Risk-based Target Level (RBTL). No PCBs were detected in any soil sample.

Arsenic in most soil samples and lead in all soil samples were detected at concentrations exceeding their respective MRBCA LDTLs; however, the concentrations were comparable to naturally occurring surface soil concentrations within Butler County, Missouri. The LDTL for arsenic is 3.89 milligrams per kilogram (mg/kg), and USGS reported that background arsenic concentrations in Butler County range from 2.055 to 23.447 mg/kg, with a mean of 8.842 mg/kg (USGS 2020). Three samples contained concentrations above the range of background arsenic in Butler county—surface sample SB05-01-03 and its field duplicate SB05-01-03D (with results from both also exceeding the RBTL for surface soil), and the sample from the deeper interval, SB05-13-15. Arsenic concentrations in the surface soil sample SB05-01-03 and field duplicate SB05-01-03D did not exceed the EPA Removal Management Level (RML) of 300 mg/kg that applies to surface soil. Arsenic in the deeper interval (where SB05-13-15 was collected) is unlikely to impact the site because future use of the site is not anticipated to be residential. The LDTL for lead is 3.74 mg/kg, and USGS reported that background lead concentrations in Butler County range from 7.603 to 441.226 mg/kg, with a mean of 36.767 mg/kg (USGS 2020). No lead result exceeded the range of

background lead in Butler County or the RBTL for surface soil. Several other metals were detected at concentrations above laboratory reporting limits, but not at levels exceeding LDTLs.

VOCs 2-butanone, acetone, and chloroform were detected at concentrations above laboratory reporting limits in the groundwater samples, but none of these concentrations exceeded an LDTL. Several SVOCs were detected at concentrations above laboratory reporting limits, and of those, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene were detected at concentrations above LDTLs in sample SB04-GW, but none of those concentrations exceeded an RBTL for indoor inhalation of vapor emissions. TPH-DRO was detected at 0.14 milligrams per liter (mg/L) in the field duplicate sample (SB04-GWD), but this was below the MRBCA LDTL of 34.3 mg/L and the RBTL of 454 mg/L. No other TPH detection occurred in groundwater samples SB04-GW and its field duplicate SB04-GWD. Arsenic and lead as total metals were detected in SB04-GW and in its field duplicate sample SB04-GWD at concentrations exceeding their respective LDTLs. However, neither of these metals was reported above LDTLs in the filtered sample for dissolved metals. Groundwater samples for metals analysis were collected from direct-push temporary wells with limited purge volumes. This can sometimes cause turbidity in the total metals samples which can elevate total metals results due to extra solids containing naturally-occurring concentrations of metals. No PCB was detected at concentration above a laboratory reporting limit in SB04-GW or its field duplicate sample SB04-GWD. The Phase II TBA recommended no further action to address SVOCs or metals in groundwater due to the following: (1) residential use is not planned for the site; (2) the property will not be a source of drinking water, as this is provided by the City's public water supply; and (3) concentrations of metals, especially arsenic, reported in unfiltered samples likely resulted partly from particulates in those samples and are likely attributable to natural occurrences of these metals. Analytical results from the Phase II TBA also indicated that the three pad-mounted transformers, identified as a REC during the Phase I ESA, likely had not released PCBs onto the site.

Tetra Tech also conducted a hazardous materials survey at the site in November 2019 that identified ACM, LBP, and hazardous materials at the buildings on the subject property (Tetra Tech 2020b). Based on these results and the conclusions of the Phase II TBA, this ABCA presents cleanup alternatives regarding only ACM, LBP, and hazardous materials in the site buildings.

## 4.0 FUTURE USE

Future use of the site is unknown; however, the current property owner has expressed interest in demolishing the existing buildings on site. The site is in a mixed-use commercial and residential area of Poplar Bluff. Assumedly, the property will be used for commercial development and/or retail space. Groundwater in the site vicinity is not known to be a source of drinking water, and no future use for this purpose is anticipated because drinking water in the area is provided by a municipal utility. Based on analytical results from soil and groundwater samples, further investigation and/or remediation does not appear to be warranted; however, ACM, LBP, and hazardous materials should be appropriately addressed prior to building renovation or demolition. No remedial activities have occurred at the site to date.

## 5.0 POTENTIAL CLEANUP ALTERNATIVES

The overall goal of any Brownfields cleanup action is to address environmental conditions preventing or impeding the preferred type of site redevelopment, and to do so in a manner protective of human health and the environment. This ABCA considers cleanup alternatives that would be based on state and federal regulations regarding ACM and LBP.

Tetra Tech evaluated Brownfields cleanup alternatives to address environmental impacts identified during the Phase II TBA (Tetra Tech 2020a) and hazardous materials survey (Tetra Tech 2020b). The purpose of the ABCA is to present viable cleanup alternatives based on site-specific conditions, technical feasibility, and preliminary cost evaluations.

The following sections describe Brownfields cleanup alternatives for addressing ACM, LBP, and hazardous materials, including a "No Action" alternative. Following the description, each alternative is evaluated in terms of its effectiveness, implementability, and cost. The purpose of evaluating each alternative is to determine its advantages and disadvantages relative to the other alternatives in order to identify key tradeoffs that would affect selection of the preferred alternative.

Effectiveness of an alternative refers to its ability to meet objectives of the Brownfields cleanup. Criteria applied to assess effectiveness of an alternative include the following:

- Overall protection of human health and the environment
- Compliance with applicable or relevant and appropriate requirements (ARAR) and other criteria, advisories, and guidance
- Long-term effectiveness
- Reduction of toxicity, mobility, or volume through treatment/removal
- Short-term effectiveness.

Criteria applied to assess implementability of an alternative are:

- Technical feasibility
- Administrative feasibility
- Availability of services and materials required during implementation of the alternative
- State acceptance
- Community acceptance.

Each alternative is evaluated to determine its estimated cost. The evaluations compare the alternatives' respective direct capital costs, which include equipment, services, and contingency allowances.

## 5.1 EVALUATED CONTAMINATION

Contamination evaluated as part of this ABCA includes ACM, LBP, and hazardous materials. The sections below discuss contaminants/materials identified during the Phase II TBA and hazardous materials survey at the site.

### 5.1.1 Asbestos-Containing Materials

During the ACM survey, Tetra Tech collected 308 bulk samples of suspect ACM. Collections of samples of building materials accorded with National Emissions Standards for Hazardous Air Pollutants (NESHAP) as adopted by EPA and Asbestos Hazard and Emergency Response Act of 1986 (AHERA) protocols. Upon completion of sampling activities, the bulk samples were sent to Quantem Laboratories (Quantem) in Oklahoma City, Oklahoma. Suspect ACM samples were analyzed per EPA Method 600/R-93/116 via Polarized Light Microscopy (PLM) analysis and, in some cases, 400 Point Count. AHERA defines ACM as any material or product that contains more than 1% asbestos. Figures 3A, 3B, and 3C in Appendix A show ACM sample locations. The ACM survey yielded the following significant findings:

**City Hall – First Floor**

- Regulated ACM was identified in black mastic associated with 12” X 12” white with black streaks floor tile (approximately 600 square feet [SF]) in the southwest hallway. The black mastic was represented by samples FT1-1, -2, and -3. Laboratory results indicated that the mastic contained 8% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” grey with red and brown streaks floor tile (approximately 300 SF) in Rooms 12 and 23. The floor tile was represented by samples FT6-1, -2, and -3. Laboratory results indicated that the floor tile contained 8% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” red floor tile and mastic (approximately 600 SF) in Rooms 21 and 22 under 12” X 12” white floor tile. The floor tile and mastic were represented by samples FT8-1, -2, and -3. Laboratory results indicated that the floor tile contained 5% chrysotile and the mastic contained 10% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” black floor tile and mastic (approximately 600 SF) in Rooms 21 and 22 under 12” X 12” white floor tile. The floor tile and mastic were represented by samples FT9-1, -2, and -3. Laboratory results indicated that the floor tile contained 6% chrysotile and the mastic contained 10% chrysotile asbestos.
- Regulated ACM was identified in 12” X 12” grey, white, and green cobblestone floor tile and black mastic (approximately 500 SF) in Rooms 14 and 15 under 12” X 12” pink and turquoise floor tile. The floor tile and mastic were represented by samples FT12-1, -2, and -3. Laboratory results indicated that the floor tile contained 4% chrysotile asbestos and the mastic contained 8% chrysotile asbestos.

- Regulated ACM was identified in 12” X 12” beige with tan cobblestone floor tile and black mastic (approximately 500 SF) in Rooms 9, 11, and 13. The floor tile and mastic were represented by samples FT14-1, -2, and -3. Laboratory results indicated that the floor tile contained 4% chrysotile and the mastic contained 8% chrysotile asbestos.
- Approximately 7,000 SF of 12” X 12” white fissured and pinhole with glue puck ceiling tile is presumed asbestos-containing in Room 20 and the east office area.
- Regulated ACM was identified in 9” X 9” brown with black streaks floor tile and mastic (approximately 4,000 SF) in Rooms 43, 46, 89, 88 and hallway, hallway near room 43, hallway leading to north exit near elm street, hallway south of boiler room hall, hallway west of boiler room, and room south of mechanical maintenance room and hallway. The floor tile and mastic were represented by samples FT15-1, -2, and -3. Laboratory results indicated that the floor tile contained 8% chrysotile and the mastic contained 5% chrysotile asbestos.
- Regulated ACM was identified in white ceiling texture (approximately 500 SF) in Room 88 and hallway, and hallway west and south of the boiler room. The ceiling texture was represented by samples CTX-1, -2, and -3. Laboratory results indicated that the ceiling texture contained 5% chrysotile asbestos.
- Regulated ACM was identified in wall texture behind white plastic wall paneling (approximately 350 SF) in the hallway south of the boiler room. The wall texture was represented by samples WM1-1, -2, and -3. Laboratory results indicated that the wall texture contained 4% chrysotile asbestos.
- Regulated ACM was identified in tan linoleum (approximately 700 SF) in the mechanical maintenance area and hallway under 12” X 12” white floor tile. The linoleum was represented by samples LIN1-1, -2, and -3. Laboratory results indicated that the linoleum contained 25% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” red floor tile (approximately 700 SF) in the mechanical maintenance area and hallway under 12” X 12” white floor tile and linoleum. The floor tile was represented by samples FT16-1, -2, and -3. Laboratory results indicated that the floor tile contained 5% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” tan floor tile (approximately 1,800 SF) in Rooms 36, 39-42, and 70, and under the carpet in hallway east of Room 46. The floor tile was represented by samples FT17-1, -2, and -3. Laboratory results indicated that the floor tile contained 8% chrysotile asbestos.
- Regulated ACM was identified in 12” X 12” cream with lime green and white streaks floor tile (approximately 700 SF) in the courtroom. The floor tile was represented by samples FT18-1, -2, and -3. Laboratory results indicated that the floor tile contained 4% chrysotile asbestos.
- Regulated ACM was identified in 9” X 9” cream with black and brown streaks floor tile (approximately 525 SF) in Rooms 62 and 63. The floor tile was represented by samples FT19-1, -2, and -3. Laboratory results indicated that the floor tile contained 8% chrysotile asbestos.
- Regulated ACM was identified in Aerocel® pipe insulation (approximately 300 linear feet [LF]) on the east side of the first floor and boiler room. The Aerocel pipe insulation was represented by samples TSI-1, -2, and -3. Laboratory results indicated that the Aerocel pipe insulation contained 60% chrysotile asbestos.

- Regulated ACM was identified in joint insulation (approximately 175 joints) on the east side of the first floor and boiler room. The joint insulation was represented by samples TSIJ-1, -2, and -3. Laboratory results indicated that the joint insulation contained 30% chrysotile asbestos.
- Regulated ACM was identified in 4" X 12" brown floor tile and mastic (approximately 10 SF) in Room 48 southwest closet. The floor tile and mastic were represented by samples FT29-1, -2, and -3. Laboratory results indicated that the floor tile contained 10% chrysotile and mastic contained 5% chrysotile asbestos.

**City Hall – Second Floor**

- Regulated ACM was identified in ceramic tile mastic (approximately 1,000 SF) on the second floor in bathrooms 71, 74, 75, 77, 78, and 79. The mastic was represented by samples CTM1-1, -2, and -3. Laboratory results indicated that the mastic contained 4% chrysotile asbestos.
- Regulated ACM was identified in 9" X 9" beige with brown streaks floor tile mastic (approximately 8,000 SF) on the second-floor hallway, Rooms 71 and 74-79, and storage and maintenance area. The mastic was represented by samples FT20-1, -2, and -3. Laboratory results indicated that the mastic contained 6% chrysotile asbestos.
- Regulated ACM was identified in yellow linoleum (approximately 350 SF) in half of the narcotics room. The linoleum was represented by samples LIN2-1, -2, and -3. Laboratory results indicated that the linoleum contained 20% chrysotile asbestos.
- Regulated ACM was identified in grey linoleum (approximately 350 SF) in half of the narcotics room. The linoleum was represented by samples LIN3-1, -2, and -3. Laboratory results indicated that the linoleum contained 65% chrysotile asbestos.
- Regulated ACM was identified in black sink undercoat (approximately 5 SF) in the narcotics room. The sink undercoat was represented by samples SU-1, -2, and -3. Laboratory results indicated that the sink undercoat contained 5% chrysotile asbestos.
- Regulated ACM was identified in grey floor tile under linoleum (approximately 1,100 SF of floor tile and linoleum) in the men's locker room. The floor tile was represented by samples FT21-1, -2, and -3. Laboratory results indicated that the floor tile contained 5% chrysotile and the linoleum contained 60 percent asbestos.
- Regulated ACM was identified in brown and tan pattern linoleum (approximately 10 SF) in Room 81 on the bottom shelf. The linoleum was represented by samples LIN4-1, -2, and -3. Laboratory results indicated that the linoleum contained 15% chrysotile asbestos.

**City Hall – Exterior**

- Regulated ACM was identified in transite panels (approximately 1,000 SF) on the south exterior soffit. The transite was represented by samples TRAN-1, -2, and -3. Laboratory results indicated that the transite contained 20% chrysotile asbestos.
- Regulated ACM was identified in brown window caulk (approximately 160 LF) on the south exterior windows. The caulk was represented by samples C-1, -2, and -3. Laboratory results indicated that the caulk contained 5% chrysotile asbestos.
- Regulated ACM was identified in black expansion caulk (approximately 50 LF) on the north loading dock. The caulk was represented by samples EC2-1, -2, and -3. Laboratory results indicated that the caulk contained 10% chrysotile asbestos.

- Regulated ACM was identified in brown and off-white window caulk (approximately 450 LF) on the north loading dock. The caulk was represented by samples C2-1, -2, and -3. Laboratory results indicated that the white caulk contained 5% chrysotile asbestos.

**Evidence Building –** No ACM was found in the Evidence Building.

A licensed asbestos abatement contractor should remove all regulated ACM listed above before demolition work disturbs the materials. The removed waste must be transported to a disposal site able to accept both friable and non-friable ACM. If the building is to be renovated and any of the above ACM materials are not to be disturbed, they may remain in place.

### 5.1.2 Lead-Based Paint

During the LBP survey, Tetra Tech tested 139 surfaces in the site buildings. The LBP survey accorded with protocols similar to the single-family housing inspection procedures in Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of LBP in Housing* (HUD Guidelines) (HUD 1997). Tetra Tech utilized a Thermo Scientific XL3t-600 XRF spectrometer to perform the LBP screening. Thermo Scientific XL3t-600 is a state-of-the-art XRF spectrum analyzing system for quantitative measurement of lead in paint on various substrates. HUD guidelines suggest that paint applied before 1978 may contain lead. HUD considers LBP as paint with lead levels above 1.0 milligram per square centimeter ($mg/cm^2$). Figures 4A, 4B, and 4C in Appendix A show LBP sample locations. The LBP survey yielded the following significant findings:

**City Hall – First Floor**

- Approximately 300 SF of white ceramic floor tile in Room 3 tested positive for LBP, with XRF reading of 6.72 $mg/cm^2$.
- Approximately 44 SF of green ceramic wall tile in Room 22 tested positive for LBP, with XRF reading of 8.74 $mg/cm^2$.
- Approximately 1,500 SF of white wall plaster in the maintenance area tested positive for LBP, with XRF reading of 1.21 $mg/cm^2$.
- Approximately 50 SF of beige ceramic floor tile in the south entryway tested positive for LBP, with XRF reading of 8.22 $mg/cm^2$.

**City Hall – Parking Garage**

- Approximately 100 LF of yellow painted concrete parking spaces in the parking garage tested positive for LBP, with XRF reading of 5.77 $mg/cm^2$.

**City Hall– Second Floor**

- Approximately 300 SF of yellow ceramic wall tile in Room 72 tested positive for LBP, with XRF reading of 4.19 mg/cm$^2$.
- Approximately 400 SF of light pink ceramic wall tile in Rooms 71 and 74 tested positive for LBP, with XRF reading of 4.57 mg/cm$^2$.
- Approximately 800 SF of cream ceramic wall tile in Rooms 72, 75, 77, 78, and 79 tested positive for LBP, with XRF reading of 4.81 mg/cm$^2$.
- Approximately 100 SF of green ceramic wall tile in the second-floor center hall bathroom tested positive for LBP, with XRF reading of 12.77 mg/cm$^2$.
- Approximately 50 SF of green ceramic wall tile in the narcotics room tested positive for LBP, with XRF reading of 14.26 mg/cm$^2$.
- Approximately 700 SF of cream/yellow ceramic wall tile in the narcotics bathroom tested positive for LBP, with XRF reading of 8.34 mg/cm$^2$.
- Approximately 40 SF of white ceramic floor tile in the narcotics bathroom tested positive for LBP, with XRF reading of 3.98 mg/cm$^2$.

**Evidence Building**

- Approximately 40 SF of white wood door in the back room of the Evidence Building tested positive for LBP, with XRF reading of 2.97 mg/cm$^2$.

### 5.1.3 PCBs

During the hazardous materials survey, Tetra Tech collected two samples of suspected PCB-containing caulk materials. Collection of samples accorded with EPA guidance. Upon completion of sampling activities, the bulk samples were sent to ALS Environmental (ALS) laboratory in Holland, Michigan. Suspect PCB-containing caulk materials were analyzed per EPA Method 8082. 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. Figures 3A and 3B in Appendix A show PCB sample locations. Laboratory results indicated that no sampled building material contained concentrations of PCBs above 50 ppm. Therefore, PCBs will not be addressed in this ABCA.

### 5.1.4 Hazardous Materials Inventory

Tetra Tech completed a hazardous materials inventory to quantify items potentially containing hazardous materials inside site buildings. Table 1 below summarizes hazardous materials identified inside site buildings.

**TABLE 1**

**SUMMARY OF HAZARDOUS MATERIALS INVENTORY**
**OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI**

| Type of Household Hazardous Waste | Assessed Quantity |
|---|---|
| **White Goods:** | 2 water heaters, 5 microwaves, 3 refrigerators, 5 air conditioning units |
| **Lamps** | |
| Fluorescent | 2,500 |
| Compact Fluorescent (CFL) | None Observed |
| | |
| **Tires** | |
| Small | None Observed |
| Large | 25 |
| | |
| **Paints (Cans)** | |
| Latex | 12 |
| Oil-Based | 10 |
| | |
| **Polychlorinated Biphenyl (PCB) Ballasts** | |
| Fluorescent | 700 |
| | |
| **Aerosols** | |
| Flammable | 40 |
| Other | 1 |
| | |
| **Heating, Ventilation, and Air Conditioning** | |
| Mercury-containing Thermostats | 35 |
| | |
| **Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC) Refrigerants** | |
| Water Fountains | 5 |
| Fire Extinguishers | 20 |
| Others | None observed |
| | |
| **Other: misc. hazardous wastes, household hazardous wastes, oils** | |
| Computers/Monitors | 10 crates of computers and monitors. Each crate holds approximately 30 computers |
| Copy Machines, Printers, Fax Machines, and Scanners | 30 |
| Poisons/Pesticides | 3 |
| Elevator | 1 |
| Household Size Generator (5,000 kilowatts) | 1 |
| 30 Gallon Diesel Tank | 1 |
| Others (describe) Miscellaneous Cleaning Products | 20 containers |
| Others (describe) Exit Signs with Batteries | 25 |
| Others (describe) Emergency Lighting with Batteries | 50 |

## 5.2 EVALUATION OF CLEANUP ALTERNATIVES

Evaluations of cleanup alternatives are based on the assumed future use scenario at the site—space used for commercial development and/or retail space. Based on assumed future use of the subject property for commercial purposes, and because building demolition is expected, Tetra Tech considered only two alternatives for cleanup of ACM, and evaluated two options to address LBP and hazardous materials. Evaluations took into account MDNR Brownfields/Voluntary Cleanup Program (B/VCP) procedural requirements—because cleanup projects implemented with EPA Brownfields Cleanup funding require participation in the MDNR B/VCP. For reference, fees associated with enrollment in the MDNR B/VCP include a $200 application fee and refundable oversight deposit of $5,000. However, whether the site will enroll in the MDNR B/VCP program is unknown. Options to address ACM, LBP, and hazardous materials assume a cleanup prior to demolition of the on-site structures.

### 5.2.1 Asbestos-Containing Material

Regarding ACM, two options were evaluated: (1) no action and (2) proper abatement. Alternative 2 can achieve clearance criteria under the MDNR B/VCP.

**Alternative 1: No Action**

Alternative 1 (no action) would leave ACM in place at the site.

Effectiveness

This alternative would not be effective if site buildings are to be demolished. Redevelopment of areas containing ACM would have to be restricted to ensure that those materials remain undisturbed. Additionally, in accordance with NESHAP regulations, demolition of buildings could not occur prior to proper abatement. This alternative would also be ineffective in achieving the goal of reducing health risks.

Implementation

Implementation of this alternative is straightforward—ACM left in place. Future redevelopment would have to consider the location and condition of the ACM, and ensure that those materials remain undisturbed. Demolition could not occur prior to abatement.

Cost

This alternative would not involve any direct costs.

**Alternative 2: Abatement of Asbestos-Containing Material**

Alternative 2 would involve, prior to demolition, proper abatement of the ACM identified in the site buildings. Abatement by a licensed State of Missouri asbestos abatement contractor would accord with applicable local, state, and federal regulations. Regulatory clearance would be obtained through successful implementation of a pre-approved Remedial Action Plan (RAP), including clearance sampling and pre/post-abatement inspections by MDNR (if required).

Effectiveness

Assuming removal of all identified ACM, Alternative 2 would eliminate the risk to human health posed by that ACM. In addition, full abatement would allow for redevelopment of the site without restrictions pertaining to disturbance of ACM.

Implementation

Abatement by a licensed State of Missouri asbestos abatement contractor would accord with applicable local, state, and federal regulations. EPA, state, and Occupational Safety and Health Administration (OSHA) requirements must be met during removal of ACM and during demolition (due to presence of LBP). ACM was identified in 82 of 308 samples collected. The following materials were determined to contain asbestos: 12” x 12” floor tile with associated mastic, 9” x 9” floor tile with associated mastic, ceiling texture, plastic wall paneling, linoleum, Aerocel pipe insulation, joint insulation, 4” x 12” floor tile with associated mastic, ceramic tile mastic, sink undercoat, transit panels, and caulk. Presumed asbestos-containing is white fissure and pinhole ceiling tile in Room 20 and the east office area.

Cost

Tetra Tech gathered estimated abatement costs from local vendor Titan Environmental Services, Inc. (Titan). Costs per SF or LF include removal and disposal costs, but not restoration costs. Abatement cost for the ACM associated with the site building is estimated at $228,425. Table 2 below summarizes abatement costs for ACM identified in the site buildings. Additional costs to be considered, particularly if the site would be enrolled in the MDNR B/VCP, include those for technical reports (RAP and Final Abatement Report) and collection of clearance samples. Estimated cost of technical plans/reports is $3,500 per plan/report (cost of plans includes consideration of all environmental issues to be addressed by cleanup activities). Additional costs for oversight and clearance sampling are considered variable based on requirements and duration of abatement. Estimated costs associated with oversight and clearance sampling are estimated at $10,000. Total cost of Alternative 2 is estimated at $241,925.

**TABLE 2**

**ASBESTOS-CONTAINING MATERIALS ABATEMENT COSTS**
**OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI**

| Material Description | Material Locations | Estimated Quantity | Cost/Unit ($/SF or $/LF) | Total Cost |
|---|---|---|---|---|
| **City Hall – First Floor** | | | | |
| 12” X 12” White with Black Streaks Floor Tile | Southwest Hallway, Rooms 16 (front), 17, 18, 19, 21, 22, 27, 28, 29, 30, 39, 86, and 87. Black Mastic in Southwest Hallway Only | 600 SF | $5.00 | $3,000 |
| 9” X 9” Grey with Red and Brown Streaks Floor Tile with Associated Mastic | Rooms 12 and 23 | 300 SF | $5.00 | $1,500 |
| 12” X 12” White Fissured and Pinhole with Glue Puck Ceiling Tile | Room 20 and East Office Area | 7,000 SF | $5.00 | $35,000 |
| 9” X 9” Red Floor Tile with Associated Mastic | Rooms 21 and 22 Under 12” X 12” White Floor Tile | 600 SF | $5.00 | $3,000 |
| 9” X 9” Black Floor Tile with Associated Mastic | Rooms 21 and 22 Under 12” X 12” White Floor Tile | 600 SF | $5.00 | $3,000 |
| 12” X 12” Grey, White, and Green Cobblestone Floor Tile with Associated Mastic | Rooms 14 and 15 – Under 12” X 12” Pink and Turquoise Floor Tile | 500 SF | $5.00 | $2,500 |
| 12” X 12” Beige with Tan Cobblestone Floor Tile with Associated Mastic | Rooms 9, 11, and 13 | 500 SF | $5.00 | $2,500 |
| 9” X 9” Brown with Black Streaks Floor Tile with Associated Mastic | Rooms 43, 46, 89, Room 88 and Hallway, Hallway Near Room 43, Hallway Leading to North Exit Near Elm Street, Hallway South of Boiler Room Hall, Hallway West of Boiler Room, and Room South of Mechanical Maintenance Room and Hallway | 4,000 SF | $5.00 | $20,000 |
| White Ceiling Texture | Room 88 and Hallway, and Hallway West and South of Boiler Room | 500 SF | $10.00 | $5,000 |
| White Plastic Wall Paneling | Hallway South of Boiler Room | 350 SF | $14.00 | $4,900 |
| Tan Linoleum | Mechanical Maintenance Area and Hallway Under 12” X 12” White Floor Tile | 700 SF | $10.00 | $7,000 |

**TABLE 2 (Continued)**

**ASBESTOS-CONTAINING MATERIALS ABATEMENT COSTS**
**OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI**

| Material Description | Material Locations | Estimated Quantity | Cost/Unit ($/SF or $/LF) | Total Cost |
|---|---|---|---|---|
| 9” X 9” Red Floor Tile with Associated Mastic | Mechanical Maintenance Area and Hallway Under White 12” X 12” Floor Tile and LIN1-1, 2, and 3 | 700 SF | $6.00 | $4,200 |
| 9” X 9” Tan Floor Tile with Associated Mastic | Rooms 36, 39-42, and 70, and Under Carpet in Hallway East of Room 46 | 1,800 SF | $6.00 | $10,800 |
| 12” X 12” Cream Floor Tile with Lime Green and White Specks with Associated Mastic | Courtroom | 700 SF | $5.00 | $3,500 |
| 9” X 9” Cream with Black and Brown Streaks Floor Tile with Associated Mastic | Rooms 62 and 63 | 525 SF | $5.00 | $2,625 |
| Aerocel® Pipe Insulation | East Side of the First Floor and Boiler Room | 300 LF | $45.00 | $13,500 |
| Joint Insulation | East Side of the First Floor and Boiler Room | 175 Joints | $50.00 each | $8,750 |
| 4” X 12” Brown Floor Tile with Associated Mastic | Room 48 Southwest Closet | 10 SF | $5.00 | $50 |
| **City Hall – Second Floor** | | | | |
| Ceramic Tile Mastic | Bathrooms in Rooms 71, 72, 74, 75, 77, 78, and 79 | 1,000 SF | $7.00 | $7,000 |
| 9” X 9” Beige with Brown Streaks Floor Tile with Associated Mastic | Hallway, Rooms 71, 74-79, and Storage and Maintenance Area | 8,000 SF | $4.00 | $32,000 |
| Yellow Linoleum | Half of the Narcotics Room | 350 SF | $10.00 | $3,500 |
| Grey Linoleum | Half of the Narcotics Room | 350 SF | $10.00 | $3,500 |
| Black Sink Undercoat | Narcotics Room | 5 SF | $500.00 | $2,500 |
| Grey Floor Tile Under Linoleum | Men’s Locker Room | 1,100 SF | $10.00 | $11,000 |
| Brown with Tan Pattern Linoleum | Bottom of Shelf in Room 81 | 10 SF | $10.00 | $100 |
| **City Hall – Exterior** | | | | |
| Transite Panels | South Soffit | 1,000 SF | $5.00 | $5,000 |
| Brown Caulk | South Windows | 160 LF | $50.00 | $8,000 |
| Black Expansion Caulk | North Loading Dock | 50 LF | $50.00 | $2,500 |
| Brown and Off-White Caulk | Windows on the Second Floor West and Southwest Sides | 450 LF | $50.00 | $22,500 |
| **Total ACM Abatement Cost** | | | | **$228,425** |

Notes:

ACM Asbestos-containing material
LF Linear feet
SF Square feet

### 5.2.2 Lead-Based Paint

Two cleanup alternatives were evaluated to address LBP found on structures associated with the subject property: (1) no action and (2) removal by demolition. Alternative 2 can achieve clearance criteria under the MDNR B/VCP.

**Alternative 1: No Action**

Alternative 1 (no action) would leave LBP in place at the site.

Effectiveness

This alternative would not be effective if site buildings are demolished. Restrictions on proposed demolition of materials containing LBP (depending on condition of the LBP) would be necessary to ensure those materials remain undisturbed. This alternative would also be ineffective in achieving the goal of reducing health risks.

Implementation

Implementation of this alternative would be straightforward—leaving the LBP in place.

Cost

This alternative would not involve any direct costs.

**Alternative 2: Lead-Based Paint Removal by Demolition**

Alternative 2 includes removal (by demolition) for proper disposal. All surfaces/components that contain LBP determined to be in good condition can be removed/demolished and disposed of as demolition waste—assuming satisfactory results of a disposal characterization test via toxicity characteristic leaching procedure (TCLP) analysis prior to disposal of the demolition debris. Application of removal/demolition techniques would be necessary in a manner that does not chip, shred, mulch, or mill the LBP. Considering the future site use scenario for the subject property buildings (i.e., demolition), this alternative is likely the most appropriate and economically feasible. Costs specified below assume removal of materials containing LBP.

This alternative is a direct approach, because LBP would be removed, and controls would not be required to manage LBP left in place prior to building demolition. Removal and off-site disposal of

LBP-containing material as special (demolition) waste would occur. Disposal characterization testing would be required prior to disposal.

Effectiveness

If all identified LBP is removed, Alternative 2 would be effective in eliminating the risk to human health posed by the LBP. This alternative would allow for demolition of site buildings without restrictions pertaining to disturbance and management of LBP.

Implementation

Abatement would accord with applicable state and federal regulations. Prior to disposal, characterization of demolition debris via TCLP analysis would be necessary. Disposal of surfaces coated with LBP would occur with disposal of general building demolitions debris. Conformance to EPA, state, and OSHA requirements would be required during removal of ACM and during demolition (due to presence of LBP).

Cost

Tetra Tech gathered estimated costs of this alternative from local vendors. Prior to disposal, characterization of demolition debris via TCLP analysis would be necessary. Assuming collection of 40 samples for TCLP analysis, estimated cost is $5,000. Additional costs to be considered, particularly if the site would be enrolled in the MDNR B/VCP, include technical reports (RAP and Final Abatement Report).

### 5.2.3 Hazardous Material

To address hazardous materials assumed to remain in site buildings scheduled for demolition, two options were evaluated: (1) no action and (2) proper removal and disposal.

**Alternative 1: No Action**

Alternative 1 (no action) would leave hazardous waste in place at the site.

Effectiveness

This alternative would not be effective regarding redevelopment of the property, and could pose health risks to future occupants.

Implementation

Implementation of this alternative would require no effort because no containment, treatment, removal, or monitoring of contaminants would occur.

Cost

No costs are associated with this alternative because no activities would occur.

**Alternative 2: Removal of Hazardous Materials**

Alternative 2 would involve removal of hazardous materials for proper disposal/recycling prior to demolition activities. Typically, these materials are classified as universal waste and should be handled by a qualified waste management company.

Effectiveness

Alternative 2 would be effective in removing the items potentially containing hazardous materials.

Implementation

Disposal would be arranged by a qualified waste management company. Hazardous materials inside site buildings would be removed for proper disposal/recycling.

Cost

Tetra Tech determined estimated disposal/recycling costs based on input from local vendor Titan and via professional judgment. Estimated total cost for disposal/recycling of hazardous waste associated with the buildings is $59,550 (Table 3 below).

**TABLE 3**

**HAZARDOUS MATERIALS REMOVAL COSTS**
**OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI**

| Items | Quantity | Costs Per Unit | Estimated Costs |
|---|---|---|---|
| Water Heaters | 2 | lump sum | $1,000 |
| Microwaves | 5 | | |
| Refrigerators | 3 | | |
| Air Conditioning Units | 5 | | |
| Fluorescent Lamps | 2,500 | $3.00 | $7,500 |
| Tires, Large | 25 | $50.00 | $1,250 |

**TABLE 3 (Continued)**

**HAZARDOUS MATERIALS REMOVAL COSTS**
**OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI**

| Items | Quantity | Costs Per Unit | Estimated Costs |
|---|---|---|---|
| Latex Paint Cans | 12 | $50.00 | $600 |
| Oil-based Paint Cans | 10 | $100.00 | $1,000 |
| Fluorescent, PCB Ballasts | 700 | $4.00 | $2,800 |
| Flammable Aerosols | 40 | $11.25 | $450 |
| Other Aerosols | 1 | $50.00 | $50 |
| Mercury-containing Thermostats | 35 | $20.00 | $700 |
| Water Fountains | 5 | $50.00 | $250 |
| Fire Extinguishers | 20 | $60.00 | $1,200 |
| Computers | 10 crates (each crate holds approximately 30 computers) | $750.00 | $7,500 |
| Copy Machines, Printers, Fax Machines and Scanners | 30 | $250.00 | $7,500 |
| Poisons/Pesticides | 3 | lump sum | $250 |
| Elevator | 1 | $5,000.00 | $5,000 |
| Household Size Generator (5,000 kilowatts) | 1 | $12,500.00 | $12,500 |
| Boiler, 30-Gallon Diesel Tank | 1 | $7,500.00 | $7,500 |
| Miscellaneous Cleaning Products | 20 containers | $50.00 | $1,000 |
| Exit Signs with Batteries | 25 | $20.00 | $500 |
| Emergency Lighting with Batteries | 50 | $20.00 | $1,000 |
| **Total Estimated Removal/Disposal Cost** | | | **$59,550** |

## 5.3 RECOMMENDED CLEANUP ALTERNATIVES

This section recommends cleanup alternatives for ACM, LBP, and hazardous materials at the site.

### 5.3.1 Asbestos-Containing Material

Alternative 2—abatement of ACM—is the recommended cleanup alternative for ACM. Future plans at the site include demolition; therefore, removal of the identified ACM would be required prior to initiation of demolition activities.

### 5.3.2 Lead-Based Paint

Alternative 2—LBP removal by demolition—is the recommended cleanup alternative for LBP identified at the site. This is the most cost-effective and direct option for addressing LBP at the site.

### 5.3.3 Hazardous Materials

Alternative 2—removal of hazardous materials—is the recommended cleanup alternative for hazardous waste in the site buildings.

### 5.3.4 Total Cleanup Cost

Table 4 below summarizes total cleanup costs. Based on the recommended cleanup alternatives, estimated total cleanup cost is $311,675, which includes site enrollment in the MDNR B/VCP and technical consulting fees. The fee for site enrollment in the MDNR B/VCP program is $5,200. Whether the site will be enrolled in the MDNR B/VCP program is unknown; however, fees associated with the program have been included for planning purposes.

## TABLE 4

## SUMMARY OF COSTS
## OAK STREET CITY HALL, POPLAR BLUFF, MISSOURI

| Contaminant/Material | Recommended Alternative | Action - Cost | Total Cost |
|---|---|---|---|
| ACM | Alternative 2 – Abatement of ACM | Abatement – $228,425 | $241,925 |
| | | Oversight and Clearance Sampling – $10,000 | |
| | | Technical Reporting – $3,500 | |
| LBP | Alternative 2 – LBP Removal by Demolition | TCLP Analysis – $5,000 | $5,000 |
| Hazardous Materials | Alternative 2 – Removal of Hazardous Materials | Removal and Disposal/Recycling – $59,550 | $59,550 |
| MDNR B/VCP Fees | | | $5,200 |
| **Total Cost** | | | **$311,675** |

Notes:

ACM Asbestos-containing material
B/VCP Brownfields/Voluntary Cleanup Program
LBP Lead-based paint
MDNR Missouri Department of Natural Resources
TCLP Toxicity characteristic leaching procedure

## 6.0 REFERENCES


Missouri Department of Natural Resources (MDNR). 2017. Air Pollution Control Program Fact Sheet – Asbestos Requirements for Demolition and Renovation Projects. May.

SCS Engineers, Inc. (SCS). 2018. Phase I Environmental Site Assessment: Poplar Bluff City Hall, 101 Oak Street, Poplar Bluff, Missouri. July 19.

Tetra Tech, Inc. (Tetra Tech). 2020a. Phase II Targeted Brownfields Assessment, Oak Street City Hall, Poplar Bluff, Butler County, Missouri. March 3.

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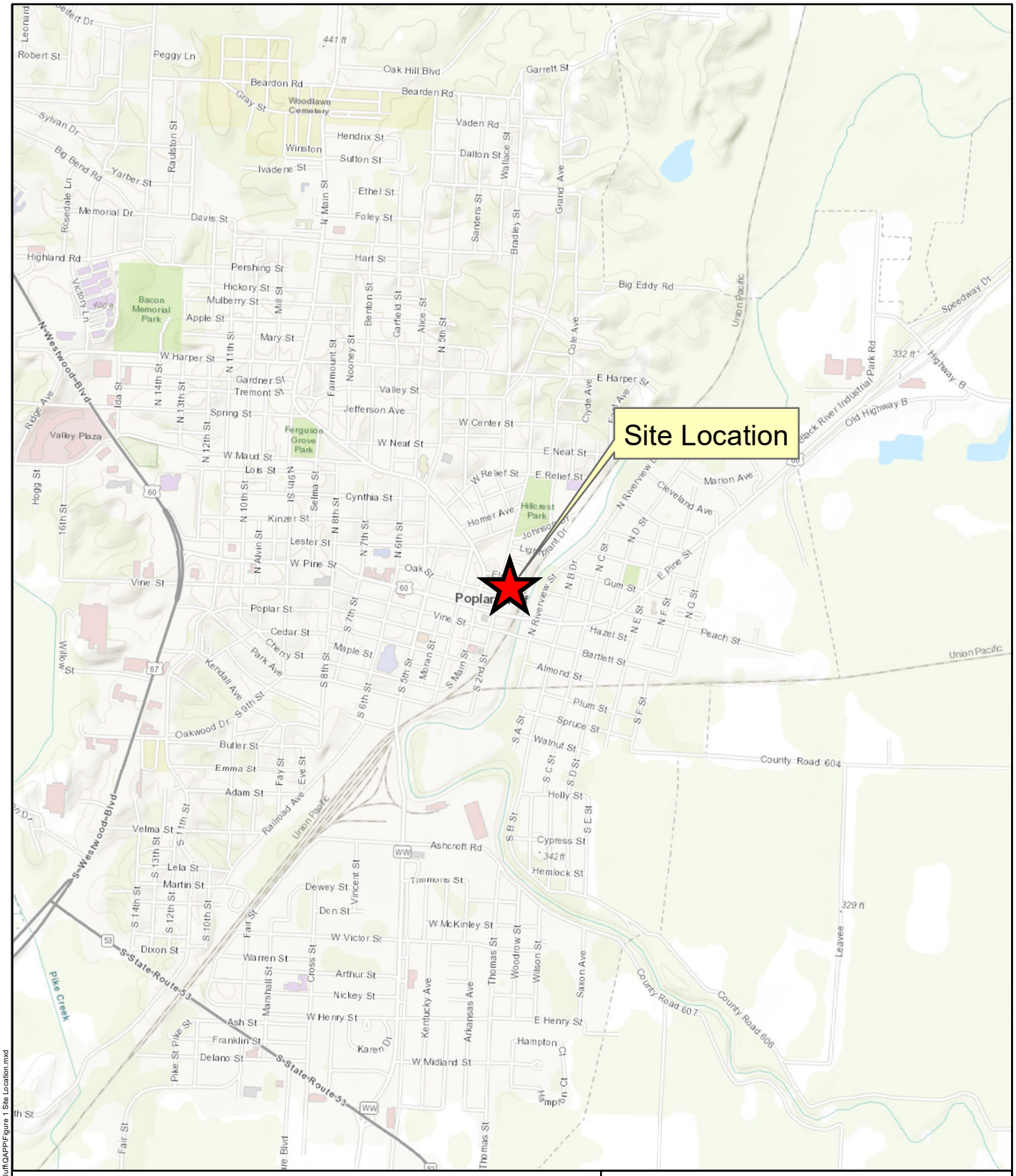
U.S. Department of Housing and Urban Development (HUD). 1997. *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

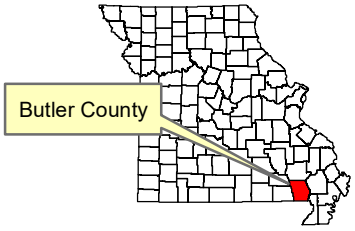
U.S. Geological Survey (USGS). 1979. Poplar Bluff, Missouri Quadrangle. 7.5-Minute Topographic Series.

USGS. 2020. Mineral Resources On-Line Spatial Data. Average Concentrations of Elements in Butler County, Missouri. Accessed February 6. https://mrdata.usgs.gov/geochem/county.php?place=f29023&el=As&rf=east-central

# APPENDIX A

# FIGURES




N

0 1,000 2,000

Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase,

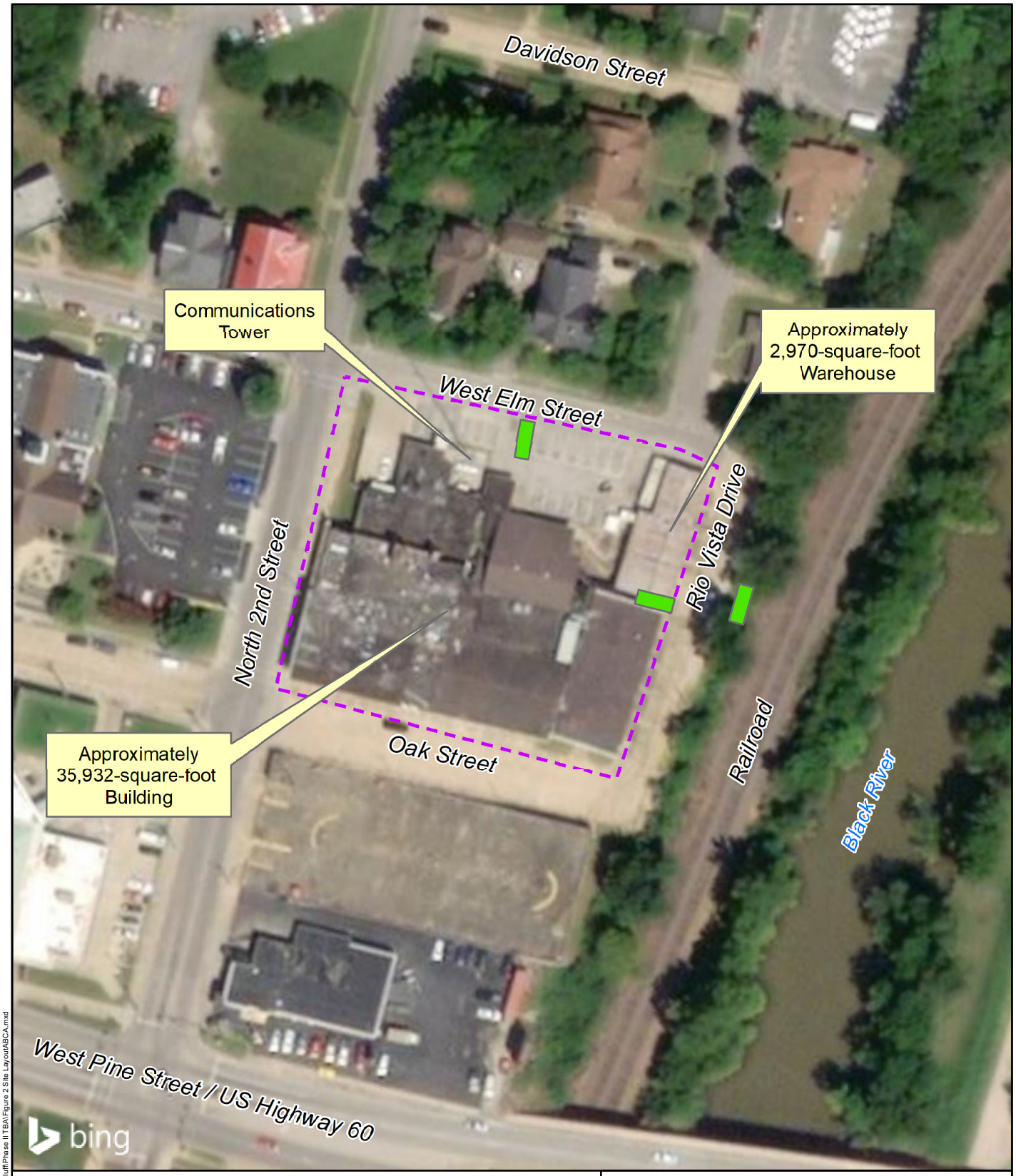
Oak Street City Hall
Poplar Bluff, Missouri

**Figure 1**
Site Location Map

TETRA TECH

Date: 2019-08-08 Drawn By: Michelle Handley Project Number: X903019F0101.005

C:\START WORK\Brownfields\Oak Street City Hall Poplar Bluff\QAPP\Figure 1 Site Location.mxd




Approximate Site Boundary

Pad-mounted Transformer Location

N

0 50 100

Feet

Service Layer Credits: © 2020 Microsoft Corporation © 2020 DigitalGlobe ©CNES (2020) Distribution Airbus DS

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 2**
Site Layout Map

TETRA TECH

Date: 2020-02-18 Drawn By: Michelle Handley Project Number: X903019F0101.005

C:\START WORK\Brownfields\Oak Street City Hall Poplar Bluff\Phase II TBA\Figure 2 Site Layout\ABCA.mxd

## Sample Key Table

| Key | Sample No. |
|---|---|
| Asbestos | |
| City Hall - First Floor | |
| 1 | FT-1 |
| 2 | FT-2 |
| 3 | FT-3 |
| 4 | FT1-1 |
| 5 | FT1-2 |
| 6 | FT1-3 |
| 7 | FT2-1 |
| 8 | FT2-2 |
| 9 | FT2-3 |
| 10 | Terrazzo-1 |
| 11 | Terrazzo-2 |
| 12 | Terrazzo-3 |
| 13 | CB-1 |
| 14 | CB-2 |
| 15 | CB-3 |
| 16 | CT-1 |
| 17 | CT-2 |
| 18 | CT-3 |
| 19 | WM-1 |
| 20 | WM-2 |
| 21 | WM-3 |
| 22 | CM-1 |
| 23 | CM-2 |
| 24 | CM-3 |
| 25 | FT3-1 |
| 26 | FT3-2 |
| 27 | FT3-3 |
| 28 | FT4-1 |
| 29 | FT4-2 |
| 30 | FT4-3 |
| 31 | FT5-1 |
| 32 | FT5-2 |
| 33 | FT5-3 |
| 34 | FT6-1 |
| 35 | FT6-2 |
| 36 | FT6-3 |
| 37 | FT7-1 |
| 38 | FT7-2 |
| 39 | FT7-3 |
| 40 | CT1-1 |
| 41 | CT1-2 |
| 42 | CT1-3 |
| 43 | CT2-1 |
| 44 | CT2-2 |
| 45 | CT2-3 |
| 46 | CTM-1 |
| 47 | CTM-2 |
| 48 | CTM-3 |
| 49 | FT8-1 |
| 50 | FT8-2 |
| 51 | FT8-3 |
| 52 | FT9-1 |
| 53 | FT9-2 |
| 54 | FT9-3 |
| 55 | FT10-1 |
| 56 | FT10-2 |

| | |
|---|---|
| 57 | FT10-3 |
| 58 | FT11-1 |
| 59 | FT11-2 |
| 60 | FT11-3 |
| 61 | FT12-1 |
| 62 | FT12-2 |
| 63 | FT12-3 |
| 64 | FT13-1 |
| 65 | FT13-2 |
| 66 | FT13-3 |
| 67 | FT14-1 |
| 68 | FT14-2 |
| 69 | FT14-3 |
| 70 | SU-1 |
| 71 | SU-2 |
| 72 | SU-3 |
| 73 | CTG-1 |
| 74 | CTG-2 |
| 75 | CTG-3 |
| 76 | LIN-1 |
| 77 | LIN-2 |
| 78 | LIN-3 |
| 79 | FT15-1 |
| 80 | FT15-2 |
| 81 | FT15-3 |
| 82 | CTX-1 |
| 83 | CTX-2 |
| 84 | CTX-3 |
| 85 | FP-1 |
| 86 | FP-2 |
| 87 | FP-3 |
| 88 | CTG1-1 |
| 89 | CTG1-2 |
| 90 | CTG1-3 |
| 91 | CB1-1 |
| 92 | CB1-2 |
| 93 | CB1-3 |
| 94 | CT2-1 |
| 95 | CT2-2 |
| 96 | CT2-3 |
| 97 | WM1-1 |
| 98 | WM1-2 |
| 99 | WM1-3 |
| 100 | CB2-1 |
| 101 | CB2-2 |
| 102 | CB2-3 |
| 103 | LIN1-1 |
| 104 | LIN1-2 |
| 105 | LIN1-3 |
| 106 | FT16-1 |
| 107 | FT16-2 |
| 108 | FT16-3 |
| 109 | CM1-1 |
| 110 | CM1-2 |
| 111 | CM1-3 |
| 112 | CB3-1 |
| 113 | CB3-2 |
| 114 | CB3-3 |

| | |
|---|---|
| 115 | FT17-1 |
| 116 | FT17-2 |
| 117 | FT17-3 |
| 118 | CT3-1 |
| 119 | CT3-2 |
| 120 | CT3-3 |
| 121 | CT4-1 |
| 122 | CT4-2 |
| 123 | CT4-3 |
| 124 | FT18-1 |
| 125 | FT18-2 |
| 126 | FT18-3 |
| 127 | CTX1-1 |
| 128 | CTX1-2 |
| 129 | CTX1-3 |
| 130 | CT4-1 |
| 131 | CT4-2 |
| 132 | CT4-3 |
| 133 | CT5-1 |
| 134 | CT5-2 |
| 135 | CT5-3 |
| 136 | CM2-1 |
| 137 | CM2-2 |
| 138 | CM2-3 |
| 139 | FT19-1 |
| 140 | FT19-2 |
| 141 | FT19-3 |
| 142 | TSI-1 |
| 143 | TSI-2 |
| 144 | TSI-3 |
| 145 | TSIJ-1 |
| 146 | TSIJ-2 |
| 147 | TSIJ-3 |
| 148 | FT29-1 |
| 149 | FT29-2 |
| 150 | FT29-3 |
| 151 | DWJC-1 |
| 152 | DWJC-2 |
| 153 | DWJC-3 |
| 154 | DWJC1-1 |
| 155 | DWJC1-2 |
| 156 | DWJC1-3 |
| 157 | DWJC1-4 |
| 158 | DWJC1-5 |
| 159 | PLSC-1 |
| 160 | PLSC-2 |
| 161 | PLSC-3 |
| 162 | PLSC-4 |
| 163 | PLSC-5 |
| 164 | PLSC-6 |
| 165 | PLSC-7 |
| 166 | SPLSC-1 |
| 167 | SPLSC-2 |
| 168 | SPLSC-3 |
| 169 | CB6-1 |
| 170 | CB6-2 |
| 171 | CB6-3 |

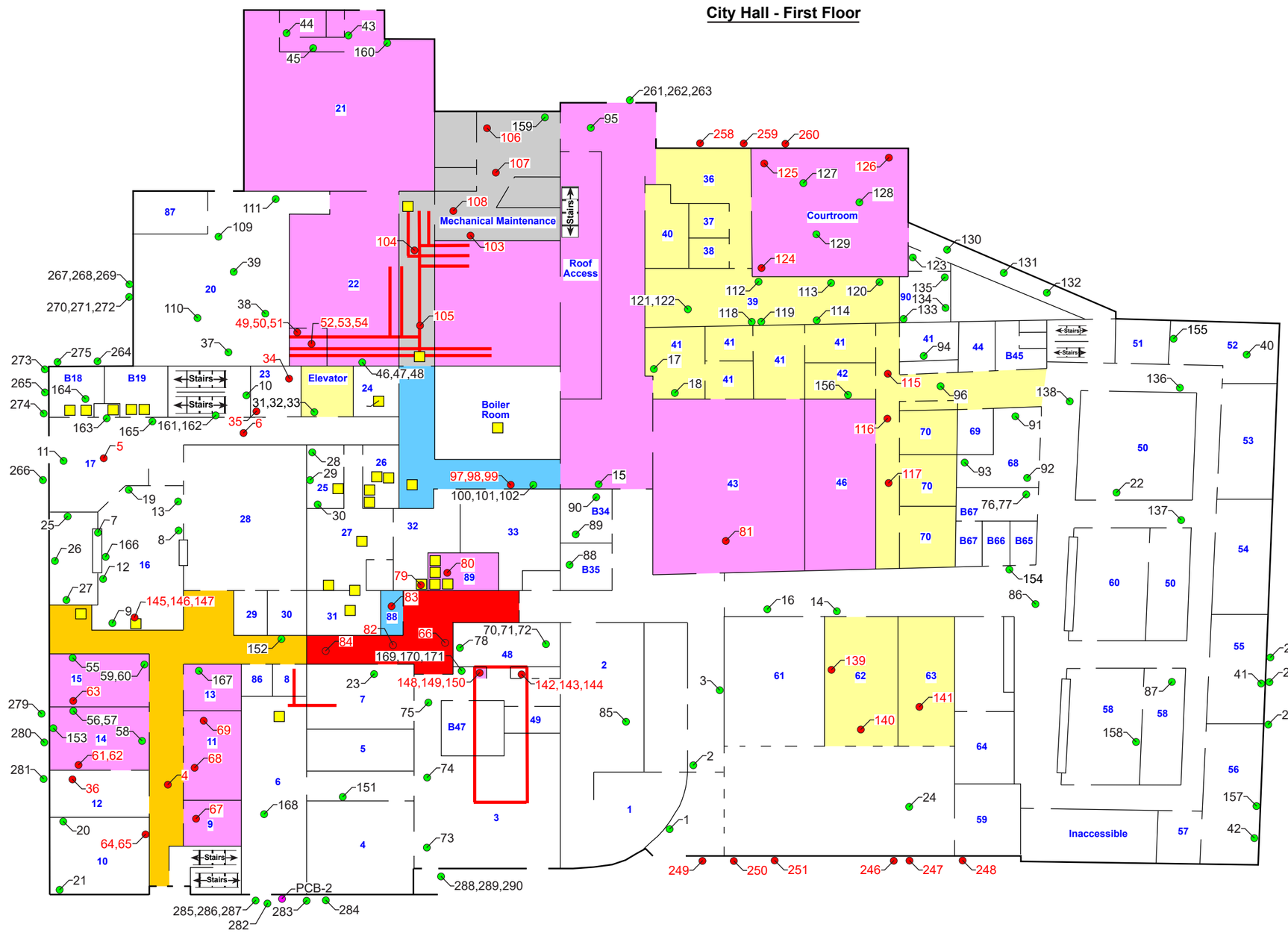
| Polychlorinated biphenyl | |
|---|---|
| PCB-1 | Additional |
| PCB-2 | Original |

| Exterior (All Buildings) | |
|---|---|
| 246 | TRAN-1 |
| 247 | TRAN-2 |
| 248 | TRAN-3 |
| 249 | C-1 |
| 250 | C-2 |
| 251 | C-3 |
| 252 | EC-1 |
| 253 | EC-2 |
| 254 | EC-3 |
| 255 | EC1-1 |
| 256 | EC1-2 |
| 257 | EC1-3 |
| 258 | EC2-1 |
| 259 | EC2-2 |
| 260 | EC2-3 |

| | |
|---|---|
| 261 | C1-1 |
| 262 | C1-2 |
| 263 | C1-3 |
| 264 | STUCCO-1 |
| 265 | STUCCO-2 |
| 266 | STUCCO-3 |
| 267 | SS-1 |
| 268 | SS-2 |
| 269 | SS-3 |
| 270 | VP-1 |
| 271 | VP-2 |
| 272 | VP-3 |

| | |
|---|---|
| 273 | EC3-1 |
| 274 | EC3-2 |
| 275 | EC3-3 |
| 276 | C2-1 |
| 277 | C2-2 |
| 278 | C2-3 |
| 279 | C3-1 |
| 280 | C3-2 |
| 281 | C3-3 |
| 282 | C4-1 |
| 283 | C4-2 |
| 284 | C4-3 |
| 285 | G-1 |
| 286 | G-2 |
| 287 | G-3 |
| 288 | C6-1 |
| 289 | C6-2 |
| 290 | C6-3 |

## City Hall - First Floor




### Legend

- Asbestos-containing material sample location
- Non-asbestos-containing material sample location
- Polychlorinated biphenyl (PCB) sample location
- Asbestos-containing joint
- Asbestos-containing thermal system insulation (TSI)
- Asbestos-containing floor tile
- Asbestos-containing floor tile and linoleum
- Asbestos-containing floor tile and mastic
- Asbestos-containing floor tile, mastic, and texture
- Asbestos-containing mastic
- Asbestos-containing texture

B35 Room number/name

Note: Room numbers were developed by Tetra Tech.

N

Not to Scale

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 3A**
Asbestos and PCB Sample Location Map

TETRA TECH

Date: 1/31/2020 Drawn By: Nick Wiederholt Project No: X903019F0101.005

X:\G\903\0101\005\FH10\Revised1\Figure1A_ACM.FH10

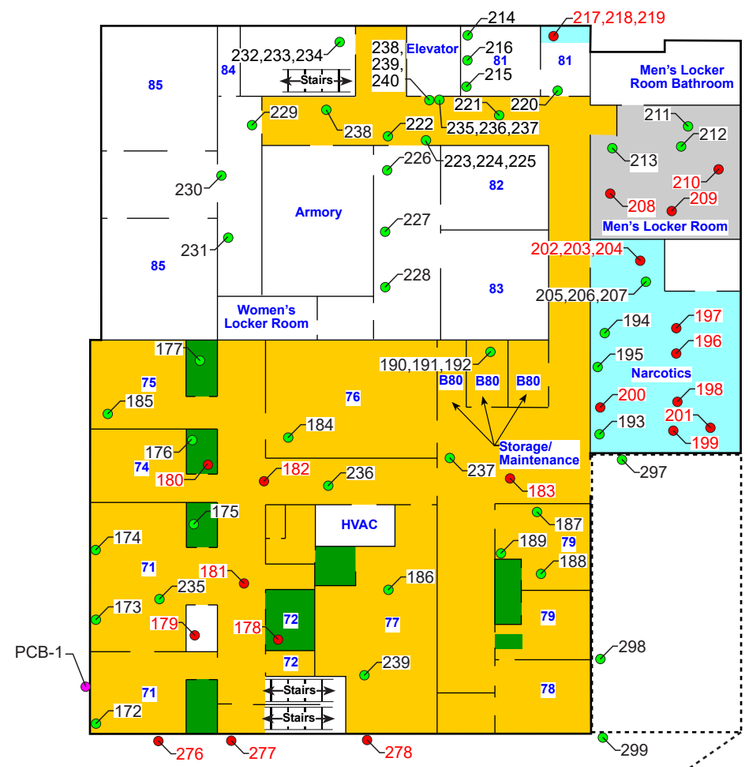
**Sample Key Table**

| Key | Sample No. |
|---|---|
| Asbestos | |
| City Hall - Second Floor | |
| 172 | CB4-1 |
| 173 | CB4-2 |
| 174 | CB4-3 |
| 175 | CTG2-1 |
| 176 | CTG2-2 |
| 177 | CTG2-3 |
| 178 | CTM1-1 |
| 179 | CTM1-2 |
| 180 | CTM1-3 |
| 181 | FT20-1 |
| 182 | FT20-2 |
| 183 | FT20-3 |
| 184 | CM3-1 |
| 185 | CM3-2 |
| 186 | CM3-3 |
| 187 | CM4-1 |
| 188 | CM4-2 |
| 189 | CM4-3 |
| 190 | WM2-1 |
| 191 | WM2-2 |
| 192 | WM2-3 |
| 193 | CT6-1 |
| 194 | CT6-2 |
| 195 | CT6-3 |
| 196 | LIN2-1 |
| 197 | LIN2-2 |
| 198 | LIN2-3 |
| 199 | LIN3-1 |
| 200 | LIN3-2 |
| 201 | LIN3-3 |
| 202 | SU1-1 |
| 203 | SU1-2 |
| 204 | SU1-3 |
| 205 | CTM2-1 |
| 206 | CTM2-2 |
| 207 | CTM2-3 |
| 208 | FT21-1 |
| 209 | FT21-2 |
| 210 | FT21-3 |
| 211 | CT7-1 |
| 212 | CT7-2 |
| 213 | CT7-3 |
| 214 | FT22-1 |
| 215 | FT22-2 |
| 216 | FT22-3 |
| 217 | LIN4-1 |
| 218 | LIN4-2 |
| 219 | LIN4-3 |
| 220 | FT23-1 |
| 221 | FT23-2 |
| 222 | FT23-3 |
| 223 | LIN5-1 |
| 224 | LIN5-2 |
| 225 | LIN5-3 |
| 226 | FT24-1 |
| 227 | FT24-2 |
| 228 | FT24-3 |
| 229 | CB5-1 |
| 230 | CB5-2 |
| 231 | CB5-3 |
| 232 | FT26-1 |
| 233 | FT26-2 |
| 234 | FT26-3 |
| 235 | FT27-1 |
| 236 | FT27-2 |
| 237 | FT27-3 |
| 238 | FT28-1 |
| 239 | FT28-2 |
| 240 | FT28-3 |
| 241 | PLSC1-1 |
| 242 | PLSC1-2 |
| 243 | PLSC1-3 |
| 244 | PLSC1-4 |
| 245 | PLSC1-5 |

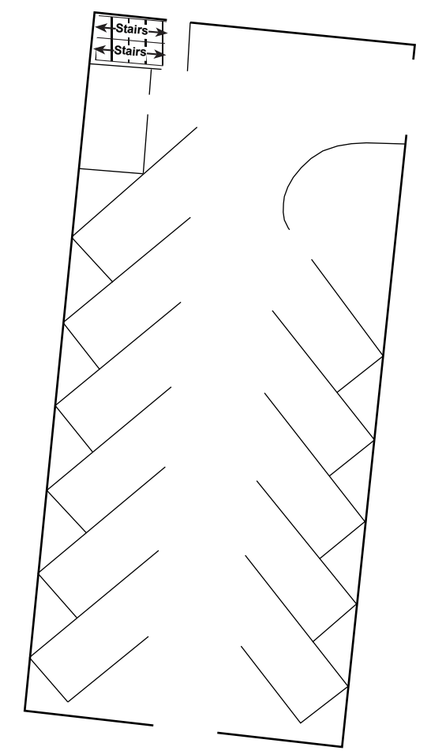
| Exterior (All Buildings) | |
|---|---|
| 246 | TRAN-1 |
| 247 | TRAN-2 |
| 248 | TRAN-3 |
| 249 | C-1 |
| 250 | C-2 |
| 251 | C-3 |
| 252 | EC-1 |
| 253 | EC-2 |
| 254 | EC-3 |
| 255 | EC1-1 |
| 256 | EC1-2 |
| 257 | EC1-3 |
| 258 | EC2-1 |
| 259 | EC2-2 |
| 260 | EC2-3 |
| 261 | C1-1 |
| 262 | C1-2 |
| 263 | C1-3 |
| 264 | STUCCO-1 |
| 265 | STUCCO-2 |
| 266 | STUCCO-3 |
| 267 | SS-1 |
| 268 | SS-2 |
| 269 | SS-3 |
| 270 | VP-1 |
| 271 | VP-2 |
| 272 | VP-3 |
| 273 | EC3-1 |
| 274 | EC3-2 |
| 275 | EC3-3 |
| 276 | C2-1 |
| 277 | C2-2 |
| 278 | C2-3 |
| 279 | C3-1 |
| 280 | C3-2 |
| 281 | C3-3 |
| 282 | C4-1 |
| 283 | C4-2 |
| 284 | C4-3 |
| 285 | G-1 |
| 286 | G-2 |
| 287 | G-3 |
| 288 | C6-1 |
| 289 | C6-2 |
| 290 | C6-3 |
| Oak St. City Hall - Roof | |
| 291 | RC-1 |
| 292 | RC-2 |
| 293 | RC-3 |
| 294 | FL-1 |
| 295 | FL-2 |
| 296 | FL-3 |
| 297 | CS-1 |
| 298 | CS-2 |
| 299 | CS-3 |

| Polychlorinated biphenyl | |
|---|---|
| PCB-1 | Additional |
| PCB-2 | Original |

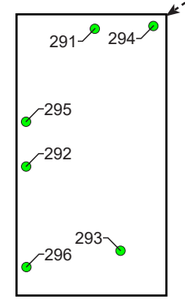
## City Hall - Second Floor




## Parking Garage




## Lower Level Roof




**Legend**

- Asbestos-containing material sample location
- Non-asbestos-containing material sample location
- Polychlorinated biphenyl (PCB) sample location
- 72 Room number/name
- Asbestos-containing ceramic tile mastic
- Asbestos-containing floor tile and linoleum
- Asbestos-containing linoleum
- Asbestos-containing mastic

Note: Room numbers were developed by Tetra Tech.

N

*Not to Scale*

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 3B**
Asbestos and PCB Sample Location Map

TETRA TECH

Date: 1/31/2020 | Drawn By: Nick Wiederholt | Project No: X903019F0101.005

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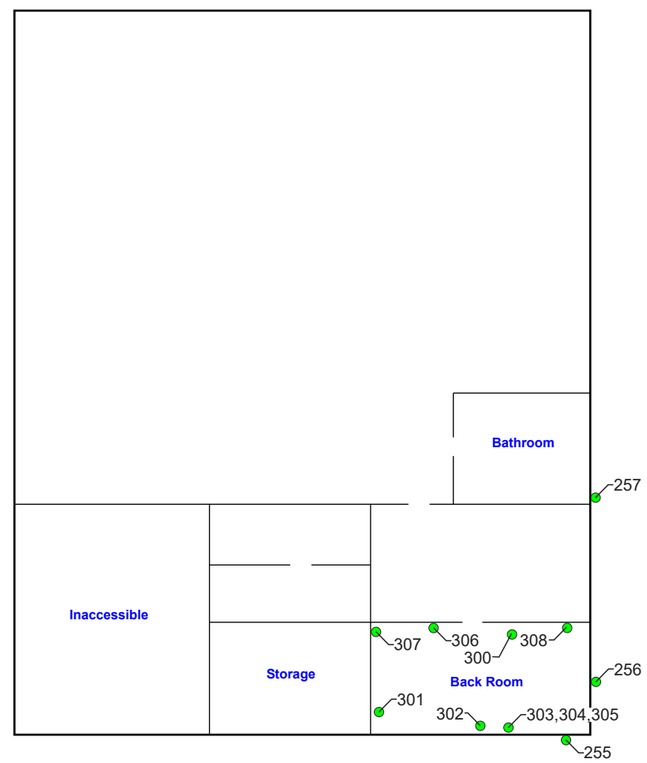
| Evidence Building | |
|---|---|
| 300 | FT30-1 |
| 301 | FT30-2 |
| 302 | FT30-3 |
| 303 | G1-1 |
| 304 | G1-2 |
| 305 | G1-3 |
| 306 | CB7-1 |
| 307 | CB7-2 |
| 308 | CB7-3 |

| Exterior (All Buildings) | |
|---|---|
| 246 | TRAN-1 |
| 247 | TRAN-2 |
| 248 | TRAN-3 |
| 249 | C-1 |
| 250 | C-2 |
| 251 | C-3 |
| 252 | EC-1 |
| 253 | EC-2 |
| 254 | EC-3 |
| 255 | EC1-1 |
| 256 | EC1-2 |
| 257 | EC1-3 |
| 258 | EC2-1 |
| 259 | EC2-2 |
| 260 | EC2-3 |
| 261 | C1-1 |
| 262 | C1-2 |
| 263 | C1-3 |
| 264 | STUCCO-1 |
| 265 | STUCCO-2 |
| 266 | STUCCO-3 |
| 267 | SS-1 |
| 268 | SS-2 |
| 269 | SS-3 |
| 270 | VP-1 |
| 271 | VP-2 |
| 272 | VP-3 |
| 273 | EC3-1 |
| 274 | EC3-2 |
| 275 | EC3-3 |
| 276 | C2-1 |
| 277 | C2-2 |
| 278 | C2-3 |
| 279 | C3-1 |
| 280 | C3-2 |
| 281 | C3-3 |
| 282 | C4-1 |
| 283 | C4-2 |
| 284 | C4-3 |
| 285 | G-1 |
| 286 | G-2 |
| 287 | G-3 |
| 288 | C6-1 |
| 289 | C6-2 |
| 290 | C6-3 |

## Evidence Building




**Legend**

- Non-asbestos-containing material sample location
- 72 Room number/name

N

*Not to Scale*

Note: Room numbers were developed by Tetra Tech.

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 3C**
Asbestos Sample Location Map

TETRA TECH

Date: 1/30/2020 | Drawn By: Nick Wiederholt | Project No: X903019F0101.005

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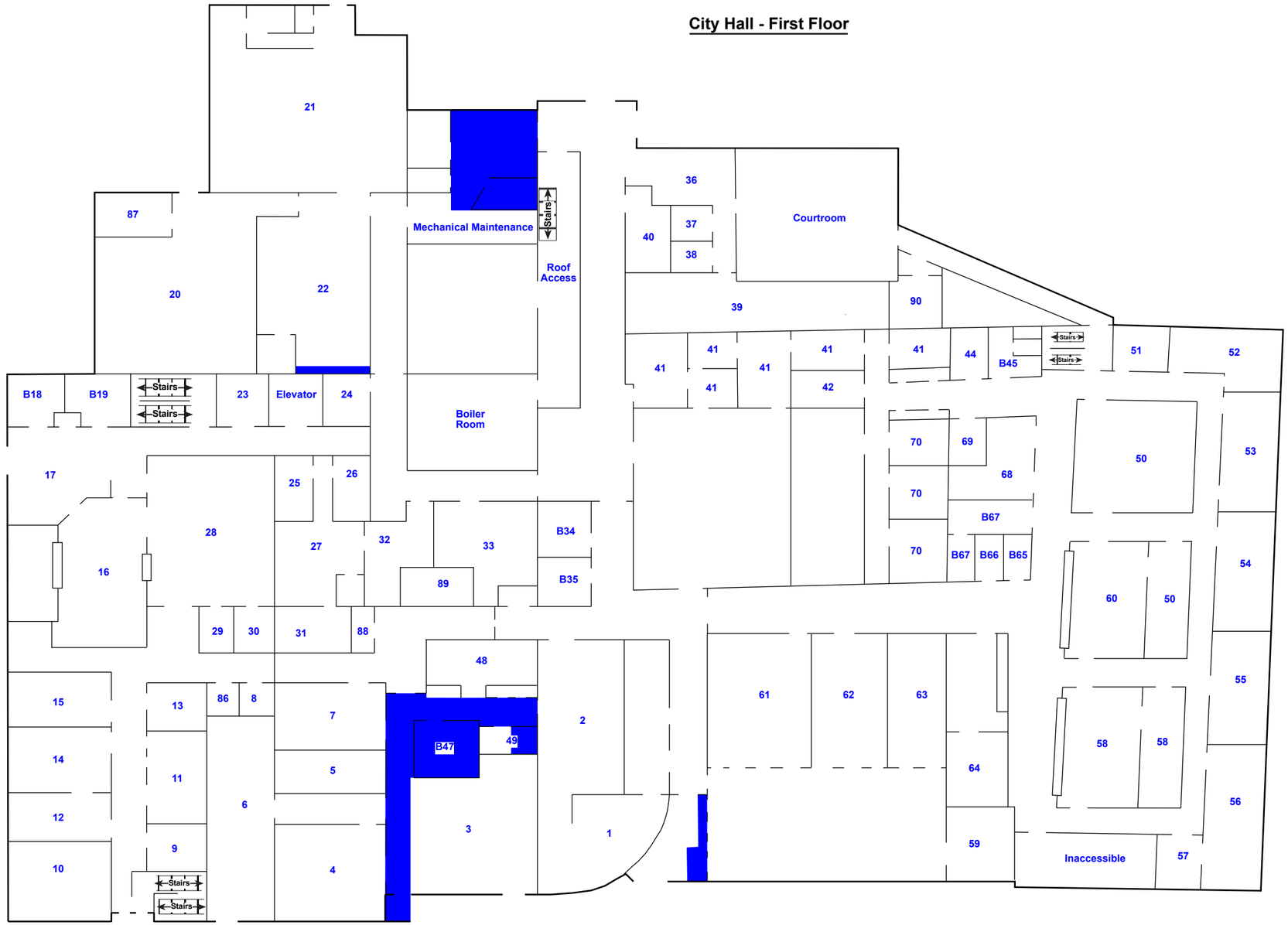
# City Hall - First Floor




**Legend**

Area containing lead-based paint (LBP)

B35 Room number/name

N

*Not to Scale*

Note: Room numbers were developed by Tetra Tech.

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 4A**
LBP Location Map

TETRA TECH

Date: 1/31/2020 | Drawn By: Nick Wiederholt | Project No: X903019F0101.005

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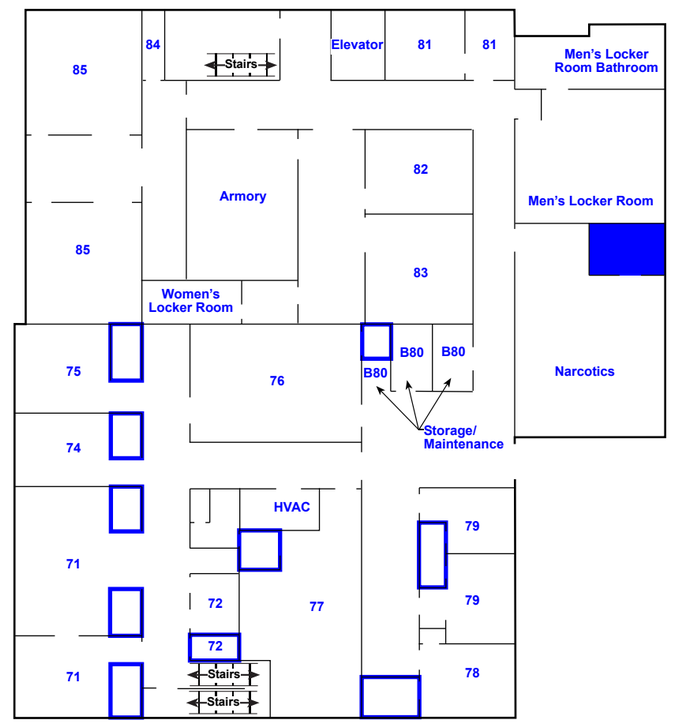
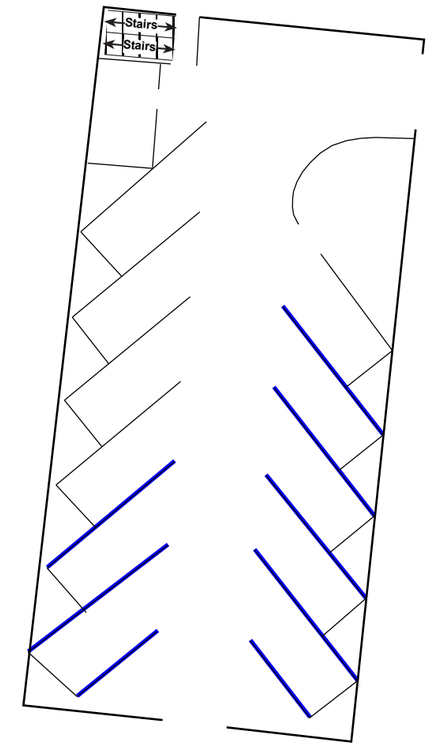
## City Hall - Second Floor




## Parking Garage




**Legend**

Area containing lead-based paint (LBP)

75 Room number/name

N

*Not to Scale*

Note: Room numbers were developed by Tetra Tech.

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 4B**
LBP Location Map

TETRA TECH

Date: 1/31/2020 | Drawn By: Nick Wiederholt | Project No: X903019F0101.005

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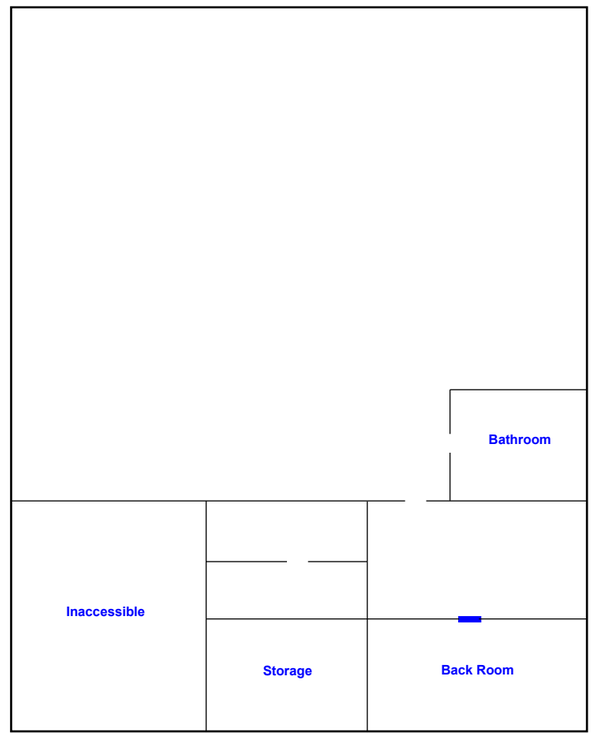
**Evidence Building**




**Legend**

Area containing lead-based paint (LBP)

B35 Room number/name

Note: Room numbers were developed by Tetra Tech.

N

*Not to Scale*

Oak Street City Hall
Poplar Bluff, Missouri

**Figure 4C**
LBP Location Map

TETRA TECH

Date: 1/31/2020 Drawn By: Nick Wiederholt Project No: X903019F0101.005

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