TOEROEK
ASSOCIATES, INC.

May 17, 2021

Mr. Bradley Roberts
Task Order Contracting Officer Representative
U.S. Environmental Protection Agency, Region 7
11201 Renner Blvd.
Lenexa, Kansas 66219

Subject: Contract No. 68HERH19D0018; Task Order (TO) No. 68E0719F0190
Wellsville Firebrick Plant, Wellsville, Montgomery County, Missouri
Analysis of Brownfields Cleanup Alternatives Report (ABCA)

Dear Mr. Roberts:

Toeroek Associates, Inc. (Toeroek) and our teaming subcontractor, Tetra Tech, Inc. (Tetra Tech), (hereafter "Toeroek Team") are pleased to present the Analysis of Brownfields Cleanup Alternatives report (ABCA) regarding the Wellsville Firebrick Plant (the subject property) located at 1199 Highway 19 in Wellsville, Missouri. This deliverable has been reviewed internally as part of Tetra Tech's quality assurance program, as well as Toeroek's quality assurance program, and is consistent with Toeroek's Quality Management Plan for the Resource Conservation and Recovery Act (RCRA) Enforcement and Permitting Assistance (REPA) contract. Documentation of this review is retained in the Toeroek Team's project files.

If you have any questions or comments, please contact Paul Kieler at 303-407-0266 or Kaitlyn Mitchell at 816-412-1742.

Sincerely,

Paul Kieler
Toeroek Team Program Manager

Kaitlyn Mitchell
Toeroek Team Project Manager

Enclosure: Phase II ESA

cc: Frank Novello, EPA Region 7
Lisa Dunning, EPA Region 7
Heather Wood, Tetra Tech
Toeroek Team Project Files

300 Union Blvd., Suite 520
Lakewood, CO 80228
303-420-7735
Fax: 303-420-7658

ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES REPORT

WELLSVILLE FIREBRICK PLANT
1199 HIGHWAY 19, WELLSVILLE, MISSOURI

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 7

Task Order	:	68E0719F0190
Subtask	:	04.03
EPA Region	:	7
Date Prepared	:	May 17, 2021
Contract No.	:	68HERH19D0018
Prepared by	:	Toeroek Associates, Inc.
Project Manager	:	Kaitlyn Mitchell
Telephone	:	816-412-1742
EPA TOCOR	:	Bradley Roberts
Telephone	:	913-551-7279

CONTENTS

APPENDICES

Appendix

TABLES

Table **Page**

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked Toeroek Associates, Inc. (Toeroek) and its teaming subcontractor, Tetra Tech, Inc., (hereafter "Toeroek Team") to provide technical support to the EPA Region 7 Brownfields Program under Contract 68HERH19D0018, Task Order (TO) 68E0719F0190. EPA Region 7 requested that the Toeroek Team conduct an Analysis of Brownfields Cleanup Alternatives (ABCA) of the Wellsville Firebrick Plant (the subject property) at 1199 Highway 19, Wellsville, Missouri (Appendix A, Figure 1). The Toeroek Team has performed this ABCA based on results of the Targeted Brownfields Assessment (TBA) (Phase II Environmental Site Assessment [ESA] and Hazardous Materials Survey) by the Toeroek Team in February 2021 (Toeroek 2021a, 2021b). According to the Brownfields Assessment Application (Missouri Department of Natural Resources [MDNR] 2020), the current property owner, Wellsville Firebrick Plant, has shown interest in selling the property for possible future redevelopment based on findings from the TBA.

The Phase II ESA report concluded that further investigation of environmental media may be necessary based on results from surface soil, subsurface soil, and groundwater samples. The Phase II ESA compared soil and groundwater sampling results to EPA risk-based Regional Screening Levels (RSLs). For the sake of this report, any cleanup is presumed to take place through the Missouri Brownfields/Voluntary Cleanup Program (B/VCP); therefore, this ABCA considers cleanup alternatives that would be based on Missouri Risk-based Corrective Action (MRBCA) Lowest Default Target Levels (LDTLs) and Tier 1 non-residential Risked-based Target Levels (RBTLs) for soil and groundwater, and state and federal regulations regarding asbestos-containing material (ACM) and lead-based paint (LBP). MDNR regulations outline ACM and LBP inspection, reporting, and disposal requirements for demolition or renovation of commercial buildings (MDNR 2017). Additionally, this ABCA includes preliminary cost estimates of evaluated cleanup alternatives.

2.0 BACKGROUND AND DESCRIPTION

The subject property is located at 1199 Highway 19 in Wellsville, Montgomery County, Missouri and is depicted on the Wellsville, Missouri 7.5-minute topographic series map (U.S. Geological Survey [USGS] 1984) (Appendix B, Figure 1). Coordinates at the approximate center of the subject property are 39.084 degrees north latitude and 91.580 degrees west longitude. The subject property encompasses approximately 79.05 acres including two lakes, four wastewater lagoons, and several on-site structures, which include an office, warehouse/production buildings, laboratory, scale house, pump house, and associated parking lots encompassing approximately 283,140 square feet of total building space (Appendix B, Figure 2). The remainder of the subject property is open/grassed land. Currently, the subject property is leased for agricultural implements and product storage (Toeroek 2021a).

A Phase I ESA report by Terracon Consultants, Inc. (Terracon) stated the subject property had been developed in 1917 with a fire brick manufacturing plant at its center. On the northern portion of the subject property, clay was mined from at least as early as the 1940s to the 1970s. Reportedly, from at least as early as 1950 to 1989, a landfill for the brick plant's waste was on the northern portion of the subject property. Four aboveground storage tanks (ASTs) were identified on historical aerial imagery dating between 1980 and 1990 (contents not determined). Operations at the subject property ceased in the early 1990s. Since that time, the buildings on the subject property have been primarily used for storage, and portions of the buildings have been taken apart and salvaged (Terracon 2018).

The landfill on the northern portion of the subject property includes wastes from brick plant operations consisting of off-specification clays and bricks, wooden pallets, demolition rubble from kilns, floor sweepings, and other materials generated during production activities. Additives and binders mixed with clay during production included phosphoric acid, pellet, pitch, chromium oxide, and phenolic resin. According to the 2018 Phase I ESA report (Terracon 2018), these additives and binders were mixed with clays during production, not sent for disposal in the landfill as raw materials (although a reference was not cited for this assertion). Reportedly, groundwater samples previously collected at the subject property from four monitoring wells surrounding the landfill contained no contamination; however, the date and analytical results were not available for review by the Phase I authors. Locations of the monitoring wells sampled also had been unknown, although Terracon observed two groundwater monitoring wells on the eastern boundary of the former landfill during site reconnaissance. During Phase II activities, one monitoring well and one manhole cover were observed in the former landfill area. On December 22, 1995, MDNR issued a final closure of the landfill (Terracon 2018).

The Phase I ESA report indicates that historical brick manufacturing operations consisted of several processes and various types of equipment including excavating equipment, crushers and grinders, brick machines, pug mills, conveyor belt systems, and high-temperature kilns. Chemicals used during these processes included calcium oxide, chromates, ethyl silicate, hydrogen fluoride, hydrochloric acid (HCl) (i.e. muriatic acid), creosote, phenyls, polycyclic aromatic hydrocarbons (PAHs), chlorides, magnesium, potassium, and sodium (Terracon 2018).

The subject property lies within a rural area, northwest of Wellsville, Missouri. It is bounded to the north by agricultural land and a former railroad line; to the east by agricultural land and Little Coon Creek to the east and north; to the south by Highway 19, followed by agricultural land; and to the west by wooded and agricultural land and one residence, with Highway 19 beyond (Toeroek 2021a).

3.0 PREVIOUS INVESTIGATIONS

Terracon identified the following recognized environmental conditions (RECs) during a Phase I ESA at the subject property in November 2018 (Terracon 2018):

- **Historical Industrial Facility On-site:** A fire brick manufacturing facility operated at the subject property since 1917, including several ASTs and underground piping identified as being for "aircraft fuel." As a result of these operations, the Phase I ESA report concluded that petroleum, heavy metals, and solvent product likely had been released at the subject property.

- **Historical Landfill On-site:** Fill material contained within the former landfill derived from unknown sources, and contents of the material are unknown, therefore posing potential for environmental impact.

The Phase I ESA report therefore recommended an additional investigation to evaluate subsurface conditions at the subject property.

The Toeroek Team conducted a Phase II ESA in October 2020 to confirm or eliminate the RECs identified by Terracon during the 2018 Phase I ESA (Toeroek 2021a). The Toeroek Team collected surface soil, subsurface soil, and groundwater samples, and submitted them for analyses for the following parameters: volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) – gasoline-range organics (GRO), TPH – diesel-range organics (DRO), TPH – oil-range organics (ORO), and Resource Conservation and Recovery Act (RCRA) metals (including mercury). Samples from two soil borings (SB-8 and SB-9) in the vicinity of the six pad-mounted transformers southeast of the kilns were also analyzed for polychlorinated biphenyls (PCBs). Figure 3 in Appendix A depicts sampling locations.

Sampling results during this Phase II ESA indicated presence of VOCs, SVOCs, TPH, PCBs (soil only), and metals in soil and groundwater at the subject property.

Highest concentrations of VOCs, SVOCs, TPHs, PCBs, and metals were detected in soil and groundwater samples collected within the following areas: to the east of and adjacent to the former elevated electrical transformer pad (SB-8 and SB-9), within the bulk fuel loading and unloading area (SB-10 and SB-11), and within the western portion of the former landfill (SB-22 and SB-23). Sampling results from soil and groundwater were compared to EPA RSLs (soil) for residential and industrial scenarios, EPA Soil Screening Levels (SSLs) (soil) for protection of groundwater with a dilution attenuation factor (DAF) of 20 (DAF of 20 was used because of depth to known groundwater supply wells in the area) (EPA 2020), EPA Maximum Contaminant Levels (MCL) (groundwater), and MRBCA LDTLs and MRBCA Tier I RBTLs for residential and non-residential soil in Type 3 (clayey) soils. These comparisons indicated elevated concentrations of petroleum constituents likely associated with historical operations. Several of these detections exceeded residential EPA RSLs, EPA SSLs, EPA MCLs, and Missouri RBTLs, indicating likely occurrence of a release. No detections exceeded a non-residential RBTL.

The Toeroek Team also conducted a hazardous material survey at the subject property in February 2021 that identified ACM, LBP, and hazardous materials at the buildings on the subject property (Toeroek 2021b). Based on these results and the conclusions of the Phase II ESA, this ABCA presents cleanup alternatives regarding ACM, LBP, and hazardous materials in the subject property buildings.

4.0 FUTURE USE

Future use of the subject property is unknown; however, the current property owner, Doc Wulff, has expressed interest in selling the subject property for potential industrial redevelopment. The subject property is in a mixed-use commercial, industrial, and agricultural area in rural Montgomery County, Missouri. Groundwater in the subject property vicinity is not known to be a source of drinking water and a search for water wells within a 1-mile radius of the subject property found only one domestic water supply well, drilled to a depth of 231 feet below ground surface (bgs) (Missouri Geological Survey 2021). No future groundwater use for this purpose is anticipated because the City of Wellsville currently derives its drinking water from the Clarence Cannon Wholesale Water Commission, which draws water from the North Fork of the Salt River in Mark Twain Lake in nearby Monroe County (McNally 2011). Based on analytical results from surface soil, subsurface soil, and groundwater samples and given the future use of the subject property for industrial purposes, 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 subject property 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.

The Toeroek Team evaluated Brownfields cleanup alternatives to address environmental impacts identified during the hazardous materials survey (Toeroek 2021b). 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; and
- 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; and
- 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 surface and subsurface soils, groundwater, ACM, LBP, and hazardous materials. The sections below discuss contaminants/materials identified during the Phase II ESA and hazardous materials survey at the subject property.

5.1.1 Surface Soil

During the Phase II ESA, the Toeroek Team collected 18 surface soil samples (Appendix A, Figure 3) within the default depth interval of 0 to 3 feet bgs for analyses for VOCs, SVOCs, TPH-GRO, TPH-DRO, TPH-ORO, and RCRA metals, including mercury. Samples from SB-8 and SB-9 underwent additional analysis for PCBs due to their proximity to six existing pad-mounted transformers. Comparisons of analytical data to MRBCA LDTLs and Tier 1 RBTLs for Type 3 (clayey) surface soils resulted in the following noteworthy findings:

- The SVOC benzo(a)pyrene was detected at concentration exceeding the Missouri LDTL and residential use RBTL in SB-9.
- Detections of lead occurred at levels exceeding the LDTL in all samples and arsenic was detected at levels exceeding the LDTL in all samples except those from SB-7, SB-19, and SB-23. At SB-8, -9, -10, -11, -16, -22, -24, -26, and -27, arsenic concentrations exceeded the average concentration of 7.413 milligrams per kilogram (mg/kg) for Montgomery County. At SB-16 and SB-24, concentrations of arsenic exceeded the standard deviation of the county average of 11.77 mg/kg. Concentrations of arsenic detected in these samples exceeded the residential RBTL (3.89 mg/kg). Concentrations of lead in surface soils at SB-8, -9, -10, -22, and -26 exceeded the average concentration of 17.584 mg/kg for Montgomery County. At SB-8, SB-9, and SB-22, concentrations of lead in surface soil exceeded the standard deviation of the county average of 25.146 mg/kg. No detected concentration of lead exceeded the residential RBTL (260 mg/kg).

Despite these residential exceedances, comparisons of analytical data to MRBCA Tier 1 non-residential RBTLs indicated no exceedances. Because of the anticipated future land use, cleanup alternatives will not address surface soil.

5.1.2 Subsurface Soil

During the Phase II ESA, the Toeroek Team collected 27 subsurface soil samples at 27 locations across the subject property (Appendix A, Figure 3) within select depth intervals based on visual staining, detected odor, or elevated photoionization detector (PID) readings. If no staining/odor or elevated PID reading was noted, the Toeroek Team collected a sample directly above the water table or from the bottom of the soil core if the water table was not encountered. Samples were analyzed for VOCs, SVOCs, TPH-GRO, TPH-DRO, TPH-ORO, and RCRA metals, including mercury. Samples from SB-8 and SB-9 underwent additional analysis for PCBs due to their proximity to six existing pad-mounted transformers. Comparisons of analytical data to MRBCA LDTLs and Tier 1 RBTLs for Type 3 (clayey) subsurface soils resulted in the following noteworthy findings:

- Benzo(a)pyrene and dibenzo(a,h)anthracene were detected in subsurface soil at concentrations above their respective Missouri LDTLs.
- Arsenic was detected in subsurface soils at concentrations above the Missouri LDTL. Lead was detected in subsurface soil at concentrations above the Missouri LDTL and residential RBTL for subsurface soil.

Despite these residential exceedances, comparisons of analytical data to MRBCA Tier 1 non-residential RBTLs indicated no exceedances. Because of the anticipated future land use, cleanup alternatives will not address subsurface soil.

5.1.3 Groundwater

During the Phase II ESA, the Toeroek Team collected 12 groundwater samples (Appendix A, Figure 3) for analyses for VOCs, SVOCs, TPH-GRO, TPH-DRO, TPH-ORO, and total and dissolved RCRA metals, including mercury. Samples from SB-8 and SB-9 underwent additional analysis for PCBs. Review of analytical data indicated the following noteworthy findings, assuming continued non-residential future use of the subject property and provision of drinking water in the area by a municipal utility:

- Concentrations of naphthalene (0.05 milligrams per liter [mg/L]) exceeded the residential RBTL (0.026 mg/L) but not the non-residential RBTL (37.2 mg/L).
- The highest concentration of dissolved arsenic in groundwater was 0.0343 mg/L.

Despite these exceedances, comparisons of analytical data to MRBCA Tier 1 non-residential RBTLs indicated no exceedances. Because of the anticipated future land use, cleanup alternatives will not address groundwater.

5.1.4 Asbestos-Containing Materials

During the ACM survey, the Toeroek Team collected 130 bulk samples of suspect ACM in six of the eight buildings. Figures 4 through 6 and Figures 10 and 11 in Appendix A show ACM sample locations. Collections of samples of building materials accorded with National Emissions Standards for Hazardous

Air Pollutants (NESHAP) as adopted by EPA, and with Asbestos Hazard and Emergency Response Act of 1986 (AHERA) protocols. Upon completion of sampling activities, the bulk samples were sent to Eurofins EMLab P&K Laboratories (Eurofins). 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 percent asbestos. Samples containing less than 1 percent asbestos were point counted. The ACM survey yielded the following significant findings, including friable ACM:

- Transite panels (approximately 275,000 square feet [SF]) on exterior walls, kiln ceilings, and roof of the Main Plant;
- Window glaze (approximately 200 linear feet [LF]) on exterior windows of the Main Plant (friable);
- 24”-48” pipe insulation (approximately 775 LF) in the kiln area of the Main Plant (friable);
- Grey 9” x 9” floor tile (approximately 150 SF) in the central office of the Main Plant;
- Window glaze (approximately 60 LF) on exterior doors of the Main Plant (friable);
- Door insulation (approximately 100 SF) in the kiln doors in the Main Plant (friable);
- Insulation (approximately 50 SF) in the kiln vent openings in the Main Plant (friable);
- Grey and blue 9” x 9” floor tile and associated mastic (approximately 2,500 SF) in the hallway, room 1, room 2, room 7, room 9, and room 10 in the Office Building;
- Brown 9” x 9” floor tile and associated mastic (approximately 550 SF) in room 3, room 6, and room 8 in the Office Building;
- Black sink undercoat (approximately 5 SF) on the sink in room 6 in the Office Building;
- Red linoleum sheet flooring (approximately 60 SF) in room 6 of the Office Building;
- Penetration sealant (approximately 25 SF) on the basement walls in the Office Building;
- Window glaze (approximately 20 LF) on grey wood doors of the Office Building (friable);
- Window caulk (approximately 55 LF) on exterior windows of the Office Building;
- Green floor tile and associated black mastic (approximately 900 SF) in the west office area of the Laboratory;
- Cement board (approximately 575 SF) on the central lab walls in the Laboratory;
- Caulk (approximately 45 LF) around exterior windows of the Laboratory;
- Roofing felt (approximately 80 SF) on the roof of the Scale House; and
- Roofing felt (approximately 150 SF) on the roof of the Pump House.

5.1.5 Lead-Based Paint

During the LBP survey, the Toeroek Team tested 311 surfaces in the eight subject property buildings. Figures 4 through 11 in Appendix A show locations of LBP detections. 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). The Toeroek Team utilized an Innov-X 6000 Alpha Series analyzer to perform the LBP screening. The Innov-X 6000 Alpha Series is an x-ray fluorescence (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).

Approximately 9,323 SF and 2,110 LF of various colors of LBP on a variety of substrates were identified throughout the buildings. Most of the material identified as LBP was damaged in some way (that is, chipped or peeling).

5.1.6 PCBs

During the hazardous materials survey, the Toeroek Team collected five samples of suspected PCB-containing caulk material at four of the eight subject property buildings. Collection of samples accorded with EPA guidance. Upon completion of sampling activities, the bulk samples were sent to Pace Analytical (Pace) laboratory in Lenexa, Kansas. 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. Laboratory results indicated that the sampled building materials did not contain a concentration of PCBs above 50 ppm. Therefore, PCBs will not be addressed in this ABCA.

5.1.7 Hazardous Materials Inventory

The Toeroek Team 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
WELLSVILLE FIREBRICK PLANT, 1199 HIGHWAY 19, WELLSVILLE, MISSOURI**

Type of Household Hazardous Waste	Assessed Quantity
White Goods:	
Water Heaters	5
Water Fountain	1
Refrigerators	2
Air Compressors	2
Microwaves	3
Heating, Ventilation, and Air Conditioning (HVAC) Units	10
Lighting:	
Fluorescent Lamps	686
Polychlorinated Biphenyl (PCB)-Containing Ballasts	268
High-Intensity Discharge Lamps	200
Batteries:	
Household Batteries	50
Other:	
Mercury Thermostat	1
Corrosives	2
Oxidizers	2
Used Solvents (Sludge)	13
Cathode Ray Tube (CRT) Televisions	2
Copy Machines	1
Large Tires	80
Small Tires	189
Latex Paint	8
Oil-Based Paint	90
Fire Extinguisher	9
Exit Signs	11
Flammable Aerosol Cans	7
Nonflammable Aerosol Cans	13
Fungicide	14
AST	1
55-Gallon Drums (containing phenolic resin, furfuryl alcohol, hydraulic fluid, sodium ortho-phenylphenate, and 75 percent phosphoric acid)	141
12-Gallon Drums (unknown contents)	53
Miscellaneous 250-Gallon Containers (contents included Durite phenolic resin)	6
Small Propane Tank	2
Gasoline: 1-Gallon Containers	4
Miscellaneous 5-Gallon Buckets (containing roof tar and paint)	30
Miscellaneous 1-Gallon Containers (holding latex paint)	10

5.2 EVALUATION OF CLEANUP ALTERNATIVES

The Toeroek Team based evaluations of cleanup alternatives on the assumed future use scenario at the subject property—industrial development. Because plans to demolish the building are unknown, the Toeroek Team considered three alternatives for cleanup of ACM and LBP, and two options to address hazardous materials. Evaluations took into account MDNR 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 subject property 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, three options were evaluated: (1) no action; (2) retention in place of all ACM not damaged or spilled under management specified in an Operations and Management (O&M) Plan, and abatement of ACM damaged or spilled; and (3) abatement of all ACM wastes. Alternatives 2 and 3 are expected to achieve clearance criteria under the MDNR B/VCP.

Alternative 1: No Action

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

Effectiveness

This alternative would not be effective if the subject property building is 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 the subject property building cannot proceed before proper abatement; therefore, demolition could not occur if this alternative would be selected. 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: O&M Plan

Alternative 2 (O&M Plan) would leave in place at the subject property ACM not damaged or spilled. The damaged or spilled ACM would require proper abatement by a licensed State of Missouri asbestos abatement contractor in accord with applicable local, state, and federal regulations.

Effectiveness

This alternative would be effective regarding rehabilitation of the subject property building containing ACM. This alternative would also be effective in achieving the goal of reducing health risks. As such, regular monitoring of ACM remaining in place would be necessary to ensure it is not damaged. Future redevelopment plans would have to consider locations and condition of the remaining ACM and ensure those materials would not be disturbed.

Implementation

Implementation of this alternative would include leaving ACM in place and properly abating damaged or spilled ACM. An O&M Plan would be developed to document presence and locations of ACM and future maintenance procedures regarding the ACM. In addition, filing the O&M Plan on the property's chain-of-title as an institutional control (IC) would be required.

Cost

Cost of completing an O&M Plan described above would be $4,500. This cost does not include abatement of damaged or spilled ACM.

Alternative 3: Abatement of all ACM Wastes

Alternative 3 would involve, prior to demolition or renovations, proper abatement of ACM identified in the subject property building. Abatement by a licensed State of Missouri asbestos abatement contractor would accord with applicable local, state, and federal regulations and a pre-approved Remedial Action Plan (RAP). Regulatory clearance sampling would be conducted according to a pre-approved Quality Assurance Project Plan (QAPP), and potentially pre/post-abatement inspections by MDNR (if required).

Effectiveness

If all identified ACM would be removed, Alternative 3 would address the risk to human health posed by ACM. In addition, full abatement would allow for redevelopment of the subject property 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 the presence of LBP. These regulations would be addressed in the MDNR B/VCP RAP and Health and Safety Plan. ACM was identified at the subject property in five of 38 samples collected by the Toeroek Team. The following materials were determined to contain asbestos: two different colors of 9- by 9-inch vinyl floor tile with associated mastic, Transite panels, window glaze, various insulations, sink undercoat, linoleum, roofing felt, penetration sealant, cement board, and window caulk, . Full abatement would include removal of these materials.

Cost

Estimated abatement costs were gathered from local vendors. Costs per SF or LF are provided, and include removal and disposal costs. Abatement cost for the ACM associated with the subject property building is estimated at $2,240,810. No restoration costs have been accounted for. Table 2 below summarizes abatement costs for ACM identified in the subject property building. Additional costs to be considered, particularly if the subject property would be enrolled in the MDNR B/VCP, include those for three technical reports (RAP, QAPP 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 cost associated with oversight and clearance is $125,000. Total cost of Alternative 3 is estimated at $2,376,310.

TABLE 2

**ASBESTOS-CONTAINING MATERIALS ABATEMENT COSTS
WELLSVILLE FIREBRICK PLANT, 1199 HIGHWAY 19, WELLSVILLE, MISSOURI**

Material Description	Material Locations	Estimated Quantity	Cost/Unit ($/SF, $/LF, or $/EA)	Total Cost
Transite panels	On exterior walls, kiln ceilings, and roof of the Main Plant	275,000 SF	$8	$2,200,000
Window Glaze	On exterior windows of the Main Plant	200 LF	$5	$1,000
Pipe Insulation	In the kiln area of the Main Plant	775 LF	$15	$11,625
Floor Tile	In the central office of the Main Plant	150 SF	$4	$600
Window Glaze	On exterior doors of the Main Plant	60 LF	$5	$300
Door Insulation	In the kiln doors in the Main Plant	2 doors	$100	$200
Insulation	In the kiln vent openings in the Main Plant	50 SF	$10	$500
Floor Tile with Mastic	Throughout the Office Building	3,050 SF	$5	$15,250
Sink Undercoat	On the sink in room 6 of the Office Building	1 sink	$50	$50
Linoleum Sheet Flooring	In room 6 of the Office Building	60 SF	$4	$240
Penetration Sealant	On the basement walls in the Office Building	25 SF	$5	$125
Window Glaze	On grey wood doors of the Office Building	20 LF	$5	$100
Window Caulk	On exterior windows of the Office Building	55 LF	$8	$440
Floor Tile with Mastic	In the west office area of the Laboratory	900 SF	$5	$4,500
Cement Board	On the central lab walls in the Laboratory	575 SF	$8	$4,600
Window Caulk	Around exterior windows of the Laboratory	45 LF	$8	$360
Roofing Felt	On the roofs of the Scale House and the Pump House	230 SF	$4	$920
Total ACM Abatement Cost				**$2,240,810**

Notes:

ACM Asbestos-containing material
EA Each
LF Linear feet
SF Square feet

5.2.2 Lead-Based Paint

The Toeroek Team evaluated three cleanup alternatives to address LBP found on structures associated with the subject property. These alternatives include: (1) no action, (2) removal through demolition, and (3) stabilization and encapsulation. Each approach (excluding no action) is expected to achieve clearance criteria under the MDNR B/VCP. For sites enrolled in the B/VCP, MDNR requires creation of an O&M Plan to document existence, location, and future maintenance procedures regarding LBP left in place. If demolition is decided, per local, state, and federal regulations, the building may be demolished with the

LBP present assuming satisfactory results of a disposal characterization test via Toxicity Characterization Leaching Procedure (TCLP) analysis prior to disposal of the demolition debris.

Alternative 1: No Action

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

Effectiveness

This alternative would not be effective if the subject property building is 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: LBP 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 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. For the future site use scenario for the subject property buildings (i.e., demolition), this alternative is likely the most appropriate and economically feasible. Regulatory clearance would be obtained through successful implementation of a pre-approved RAP. Any materials not passing the TCLP analysis would have to be disposed of as hazardous waste. 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.

Effectiveness

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

Implementation

Abatement would accord with applicable state and federal regulations. Prior to disposal, demolition debris would require characterization via TCLP analysis. Surfaces coated with LBP would be disposed of with general building demolitions debris. EPA, State, and OSHA requirements must be met during removal of ACM and during demolition due to the presence of LBP. These regulations will be addressed in the MDNR B/VCP RAP and Health and Safety Plan.

Cost

Estimated costs of this alternative were gathered from local vendors. Prior to disposal, demolition debris would require characterization via TCLP analysis. Assuming 25 samples will be collected for TCLP analysis, estimated cost is $12,500. Additional costs to be considered, particularly if the subject property would be enrolled in the MDNR B/VCP, include two technical reports (RAP and Final Abatement Report). 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). Total cost of Alternative 2 is estimated at $19,500 and does not include cost of the demolition and disposal. If the TCLP analysis determined that the waste was lead containing, additional costs would be associated with hazardous waste disposal.

Alternative 3: LBP Stabilization and Application of Encapsulation

Alternative 3 includes stabilization of LBP in poor condition (chipping, flaking, etc.) and application of an encapsulant to all LBP surfaces. The encapsulant would be a durable, air- and dust-tight, surface coating material. Application of the encapsulant would ensure that LBP remaining could not leach to the surface and pose a threat to future occupants. In accordance with state regulations, the condition of LBP-containing surfaces should be inspected, and removal of loose (chipped, flaking, etc.) LBP would be required. The removed LBP residue should be segregated for proper disposal. Based on findings of the subject property reconnaissance by the Toeroek Team, numerous surfaces would require stabilization to remove loose LBP.

Waste generation and amount of material sent for disposal would be less than under Alternative 2. Regulatory clearance would be obtained through successful implementation of a pre-approved RAP, a pre-approved QAPP and pre-/post-encapsulation inspections by MDNR. In addition, collection of dust-wipe samples in accordance with MDNR clearance regulations would be necessary after completion of all interior renovations to verify that all lead dust levels are below MDNR clearance levels.

Effectiveness

Encapsulation is a relatively simple process that does not significantly alter structural conditions. This alternative would allow redevelopment of the subject property; however, restriction (ICs) would apply concerning future disturbance of LBP. For sites enrolled in the MDNR B/VCP, MDNR requires creation of an O&M Plan to document presence and location of LBP, and future maintenance procedures regarding LBP. In addition, filing the O&M Plan on the property's chain-of-title as an IC would be required.

Implementation

Stabilization and encapsulation by a licensed State of Missouri lead abatement contractor would accord with applicable state and federal regulations. Encapsulation is not a viable alternative for surfaces subject to impact or friction. Encapsulation requires follow-up inspections, maintenance, and possible building restrictions. Abatement by a registered lead paint contractor would accord with applicable state and federal regulations. Segregation and proper disposal of LBP residue removed during stabilization activities (likely as hazardous waste) would be required. Because this technique can generate a hazardous waste stream, careful consideration of precautions concerning worker health and safety would be necessary.

Cost

Estimated costs were gathered from local vendors. Estimated cost of stabilization and encapsulating is $6 per SF or LF. Assuming all surfaces containing LBP would require stabilization/encapsulation, the cost of Alternative 3 is estimated at $68,598. Additional costs to be considered, particularly if the subject property would be enrolled in the MDNR B/VCP, include three technical reports (RAP, QAPP 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 estimated at $5,000. This estimated cost may vary depending on the abatement techniques applied. No restoration costs have been accounted for. Total cost for Alternative 3 is estimated at $84,098.

5.2.3 Hazardous Materials

For hazardous materials assumed to remain in buildings scheduled for renovation or 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 materials in place at the subject property.

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 removing hazardous materials for proper disposal/recycling prior to rehabilitation or demolition activities. Some of these materials may be classified as hazardous 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

Estimated disposal/recycling costs were gathered from local vendors and determined via professional judgment. Estimated disposal/recycling cost for the hazardous materials associated with the building is $118,618.50. Table 3 below lists removal costs for hazardous materials identified in the subject property building.

TABLE 3

HAZARDOUS MATERIALS REMOVAL COSTS
WELLSVILLE FIREBRICK PLANT, 1199 HIGHWAY 19, WELLSVILLE, MISSOURI

Type of Household Hazardous Waste	Quantity	Costs Per Unit	Estimated Costs
Water Heaters	5	$75	$375
Water Fountain	1	$25	$25
Refrigerators	2	$100	$200
Air Compressors	2	$50	$100
Microwaves	3	$25	$75
Heating, Ventilation, and Air Conditioning (HVAC) Units	10	$750	$7,500
Fluorescent Bulbs	686	$2.50	$1,715
Polychlorinated Biphenyl (PCB)-containing Ballasts	268	$4	$1,072
Mercury Lights	200	$9	$1,800
Household Batteries	50	$3	$150
Mercury Thermostat	1	$15	$15
Corrosives	2	$18.50	$37
Oxidizers	2	$19.50	$39
Used Solvents (Sludge)	13	$17.50	$227.50
Televisions	2	$50	$100
Copy Machines	1	$150	$150
Large Tires	80	$40	$3,200
Small Tires	189	$20	$3,780
Latex Paint	8	$10	$80
Oil-Based Paint	90	$10	$900
Fire Extinguisher	9	$51	$459
Exit Signs	11	$14	$149
Flammable Aerosol Cans	7	$9	$63
Non-flammable Aerosol Cans	13	$5	$65
Fungicide	14	$10	$140
Aboveground Storage Tanks (AST)	1	$2,000	$2,000
55-gallon Drums (containing phenolic resin, furfuryl alcohol, hydraulic fluid, sodium ortho-phenylphenate, and 75 percent phosphoric acid)	141	$505	$71,205
12-gallon Drums (unknown contents)	53	$115	$6,095
Miscellaneous 250-gallon Containers (contents included Durite phenolic resin)	6	$2,777	$16,662
Small Propane Tank	2	$40	$80
Gasoline: 1-gallon Containers	4	$40	$160

Type of Household Hazardous Waste	Quantity	Costs Per Unit	Estimated Costs
Miscellaneous 5-gallon Buckets (containing roof tar and paint)	30	$35	$1,050
Miscellaneous 1-gallon Containers (holding latex paint)	10	$7.50	$75
		Total Estimated Removal/Disposal Cost	**$118,618.50**

5.3 RECOMMENDED CLEANUP ALTERNATIVES

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

5.3.1 Asbestos-Containing Material

Alternative 2— retention in place of all ACM not damaged or spilled under management specified in an O&M Plan, and abatement of ACM damaged or spilled—is the recommended cleanup alternative for ACM. The damaged or spilled ACM would require proper abatement by a licensed State of Missouri asbestos abatement contractor in accord with applicable local, state, and federal regulations.

5.3.2 Lead-Based Paint

Alternative 2—LBP removal by demolition—is the recommended cleanup alternative for LBP identified at the subject property. Building materials containing LBP would be demolished and disposed of as demolition waste. This alternative could be implemented by general construction/demolition workers. Based on presence of lead, construction/demolition work must accord with OSHA guidelines for protection of workers.

5.3.3 Hazardous Materials

Alternative 2—removal of hazardous materials—is the recommended cleanup alternative for hazardous waste in the subject property 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 $148,943, 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 subject property 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
WELLSVILLE FIREBRICK PLANT, 1199 HIGHWAY 19, WELLSVILLE, MISSOURI

<table>
<tr><th>Contaminant/Material</th><th>Recommended Alternative</th><th>Action - Cost</th><th>Total Cost</th></tr>
<tr><td>ACM</td><td>Alternative 2 – Abatement of ACM</td><td>O&M Plan</td><td>$4,500</td></tr>
<tr><td rowspan="2">LBP</td><td rowspan="2">Alternative 2 – LBP Removal by Demolition</td><td>TCLP Analysis - $12,500</td><td rowspan="2">$19,500</td></tr>
<tr><td>Technical Reporting – $7,000</td></tr>
<tr><td>Hazardous Materials</td><td>Alternative 2 – Removal of Hazardous Materials</td><td>Removal and Disposal/Recycling – $118,618.50</td><td>$118,618.50</td></tr>
<tr><td colspan="3">MDNR B/VCP Fees</td><td>$5,200</td></tr>
<tr><td colspan="3">Total Cost</td><td>$147,818.50</td></tr>
</table>

Notes:

ACM Asbestos-containing material
B/VCP Brownfields/Voluntary Cleanup Program
LBP Lead-based paint
MDNR Missouri Department of Natural Resources
O&M Operation and Maintenance
TCLP Toxicity Characteristic Leaching Procedure

6.0 REFERENCES

McNally, Mark. 2011. Clarence Cannon Wholesale Water Commission. Presentation. Annual Water Conference 2011. Accessed December 2020. http://tristatewater.org/wp-content/uploads/2011/11/Mark-McNally-Clarence-Cannon-Wholesale-Water-Commission.pdf

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

Missouri Department of Natural Resources (MDNR). 2020. Brownfields Assessment Application regarding the Wellsville Firebrick Plant property, submitted to MDNR. April 5.

Missouri Geological Survey (MGS). 2021. GeoSTRAT Interactive Map. Accessed on April 29. https://dnr.mo.gov/geology/geostrat.htm

Terracon Consultants, Inc. (Terracon). 2018. Phase I Environmental Site Assessment. Wellsville Firebrick Company, 1199 Highway 19, Wellsville, Missouri. November 6.

Toeroek Associates, Inc. (Toeroek). 2021a. Targeted Brownfields Assessment, Phase II Environmental Site Assessment, Wellsville Firebrick, 1199 Highway 19, Wellsville, Missouri. March 16.

Toeroek Associates, Inc. (Toeroek). 2021b. Targeted Brownfields Assessment, Hazardous Materials Survey, Wellsville Firebrick, 1199 Highway 19, Wellsville, Missouri. March 22.

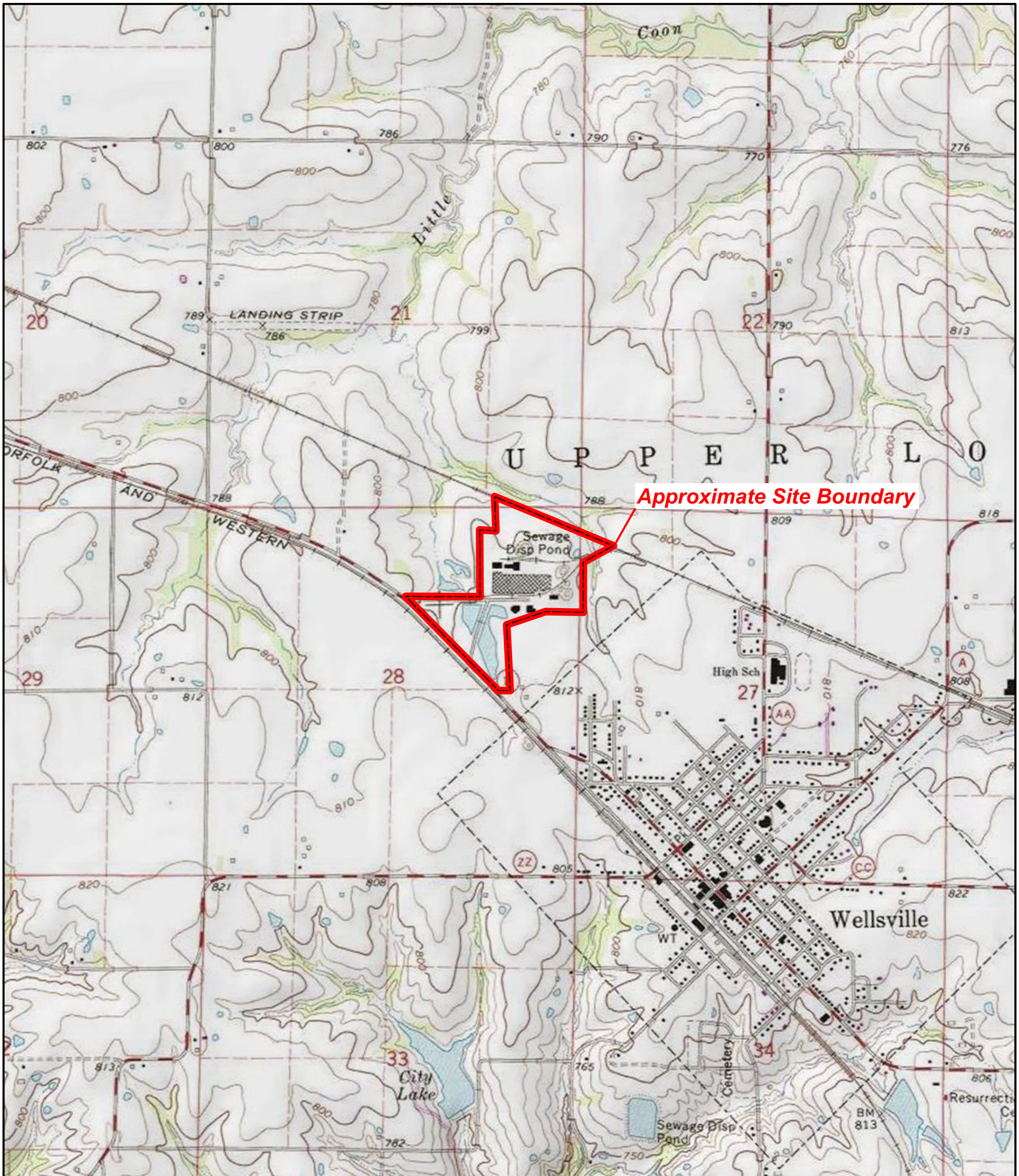
U.S. Environmental Protection Agency (EPA). 2020. Regional Screening Levels (RSLs) – Generic Tables. November. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

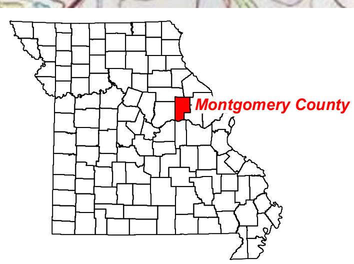
U.S. Department of Housing and Urban Development (HUD). 1997. *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

U.S. Geological Survey (USGS). 1984. Wellsville, Missouri Quadrangle. USGS 7.5-Minute Topographic Series.

APPENDIX A

FIGURES





N

0 1,000 2,000

Feet

Source: USGS Wellsville, MO 7.5 Minute Topo Quad, 1984

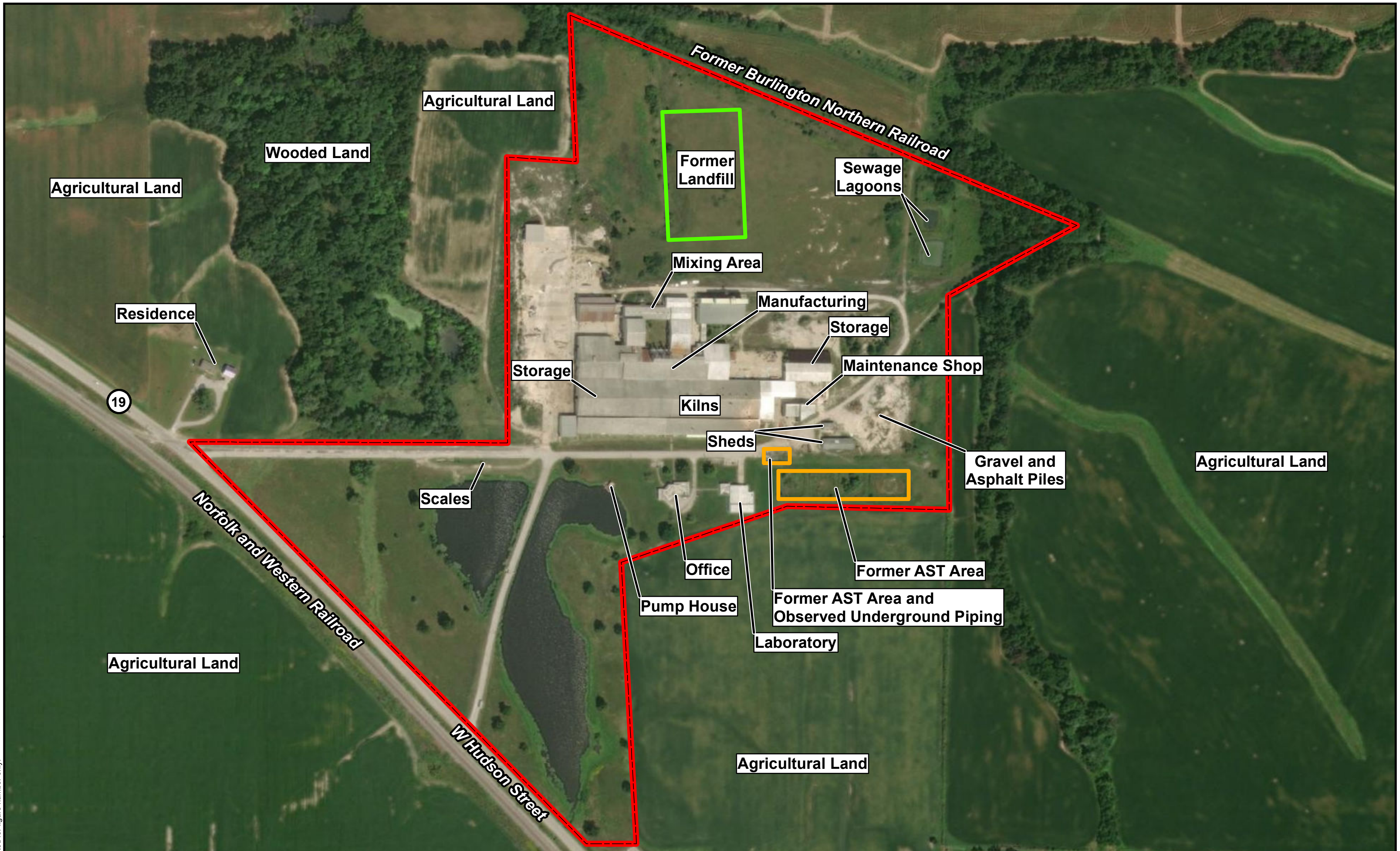
X:\P\65210190\04.02\Projects\mxd\Figure1.mxd

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 1
Site Location Map

TETRA TECH

Date: 6/17/2020 Drawn By: Nick Wiederholt Project No: 103G65210190.04.02



Legend

Approximate site boundary

Former AST area

Former landfill

AST Aboveground storage tank

N

0 240 480

Feet

Wellsville Firebrick Plant
Wellsville, Missouri

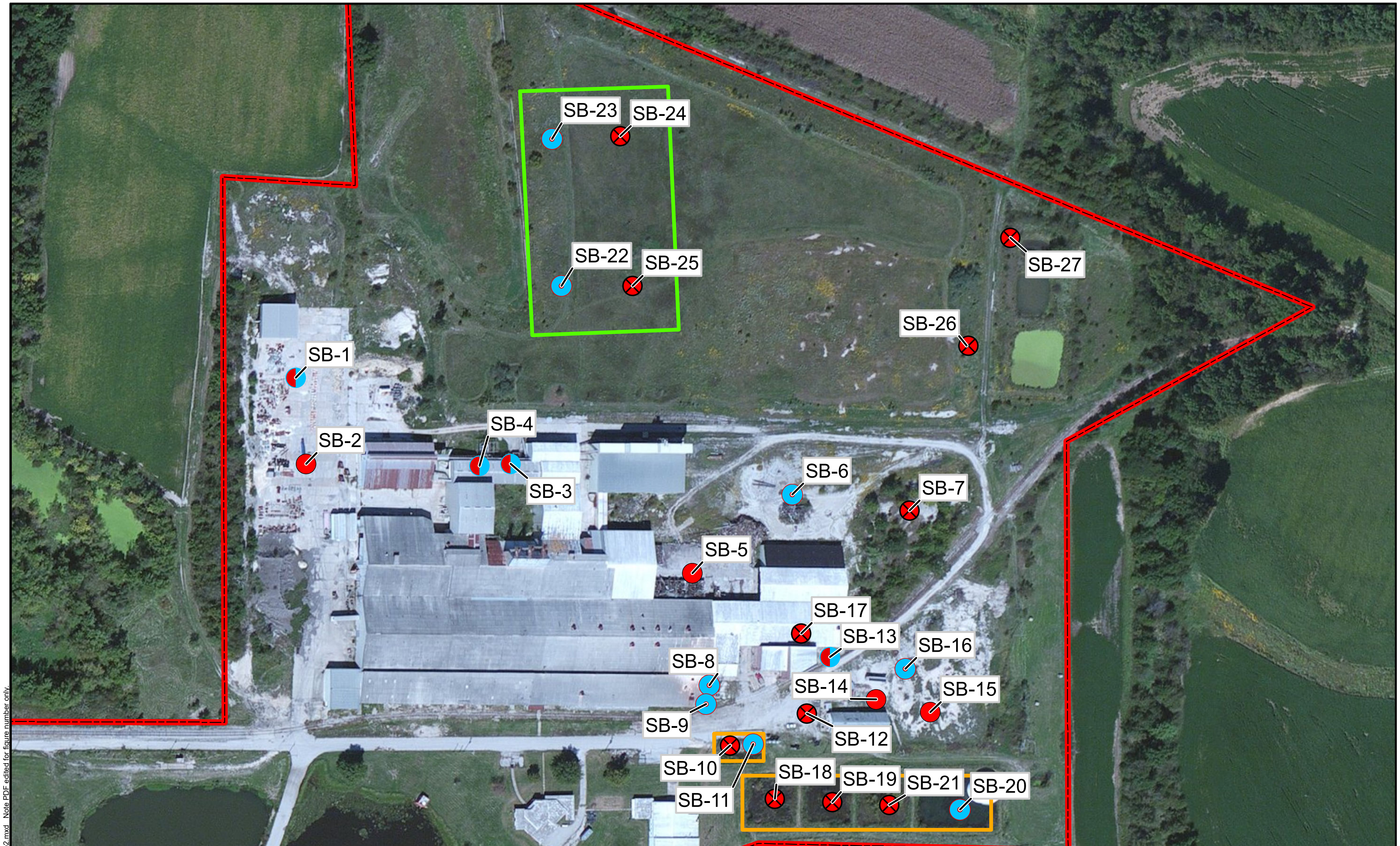
Figure 2
Site Layout Map

TETRA TECH

Date: 6/18/2020 Drawn By: Nick Wiederholt Project No: 103G65210190.04.02

Source: Esri, ArcGIS Online, World Imagery, 2014; Terracon, Wellsville Firebrick Company, Site Diagram, Exhibits 2 & 3, 2018.

X:\P\65210190\04.02\Projects\mxd\Figure2.mxd Note PDF edited for figure number only.



Legend

- Subsurface soil
- Surface soil and subsurface soil
- Subsurface soil and groundwater
- Surface and subsurface soil and groundwater
- Approximate site boundary
- Former AST area
- Former landfill
- AST Aboveground storage tank

N

0 125 250

Feet

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 3
Sample Location Map

TETRA TECH

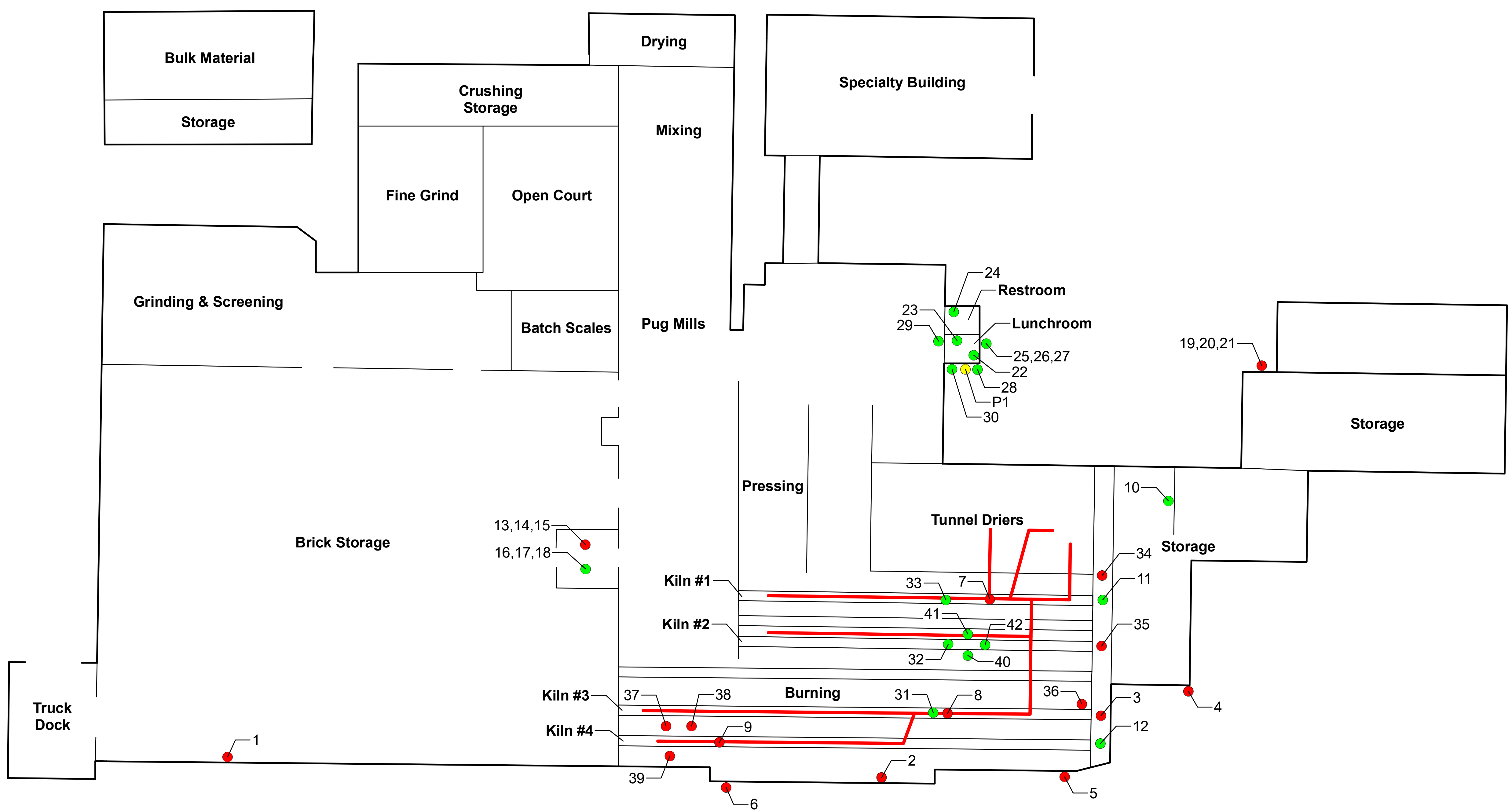
Date: 12/1/2020 | Drawn By: Nick Wiederholt | Project No: 103G65210190.04.02

X:\P\6521\0190\04\Projects\mxd\Updated_11.13.2020\Figure2.mxd Note PDF edited for figure number only.

Sample Key Table

Key	Sample No.
Asbestos	
1	MP-TRANS-01
2	MP-TRANS-02
3	MP-TRANS-03
4	MP-WG-01
5	MP-WG-02
6	MP-WG-03
7	MP-TSI-01
8	MP-TSI-02
9	MP-TSI-03
10	MP-FB-01
11	MP-FB-02
12	MP-FB-03
13	MP-FT-01
14	MP-FT-02
15	MP-FT-03
16	MP-CT-01
17	MP-CT-02
18	MP-CT-03
19	MP-WG2-01
20	MP-WG2-02
21	MP-WG2-03
22	MP-CB-01
23	MP-CB-02
24	MP-CB-03
25	MP-WM-01
26	MP-WM-02
27	MP-WM-03
28	MP-WC-01
29	MP-WC-02
30	MP-WC-03
31	MP-KTI-01
32	MP-KTI-02
33	MP-KTI-03
34	MP-DI-01
35	MP-DI-02
36	MP-DI-03
37	MP-INS-01
38	MP-INS-02
39	MP-INS-03
40	MP-BI-01
41	MP-BI-02
42	MP-BI-03
PCB	
P1	MP-PCB-1

Main Plant



Legend

- ● ACM sample location
- ● Non-ACM sample location
- ● PCB sample location
- ACM TSI pipe
- ACM Asbestos-containing material
- PCB Polychlorinated biphenyl
- TSI Thermal system insulation

Note: Lead-based paint was identfied throughout the main plant on railings, i-beams, bollards, platforms, ladders, and door frames.

N

Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 4

Sample Location Map - Main Plant

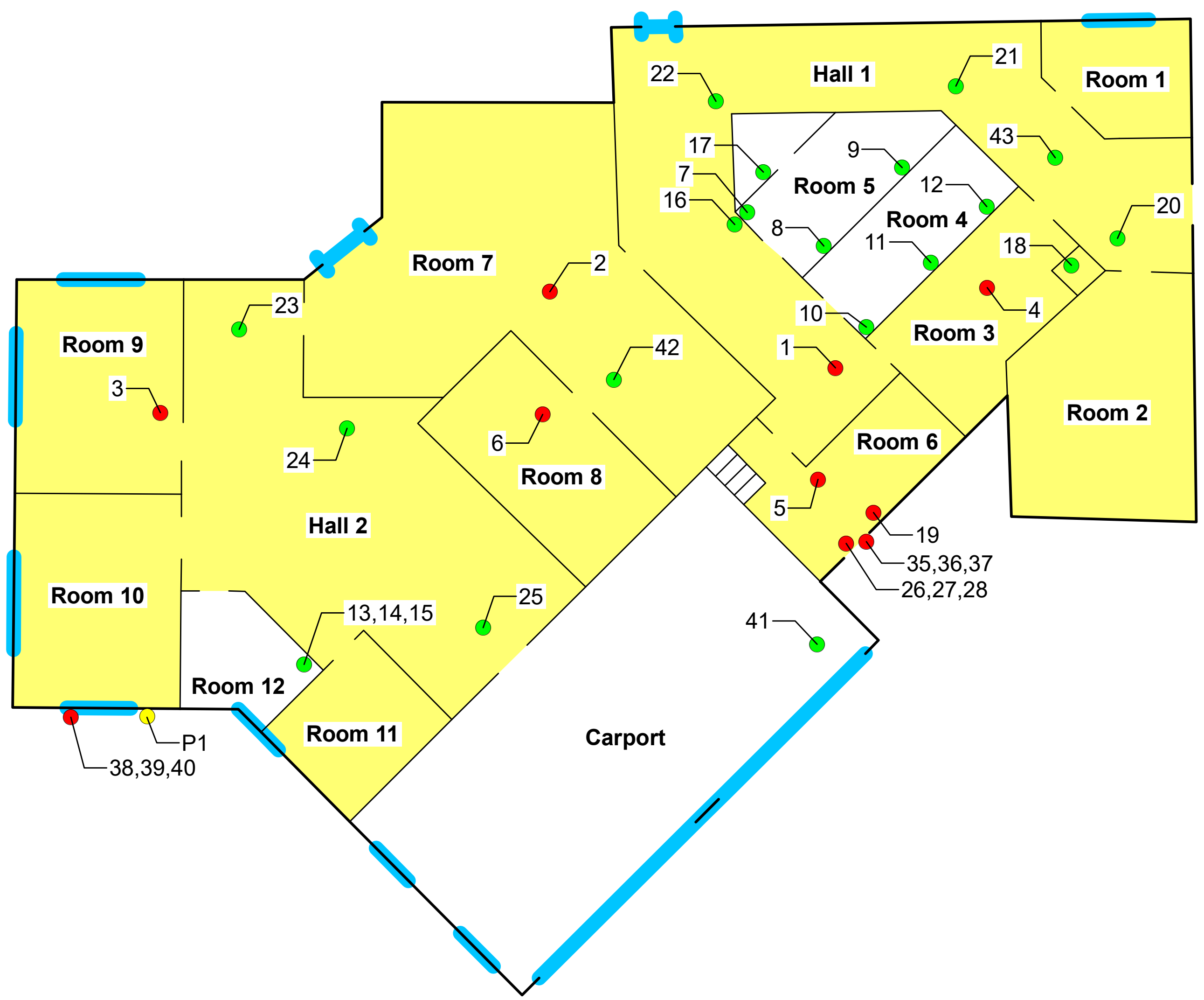
TETRA TECH

Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

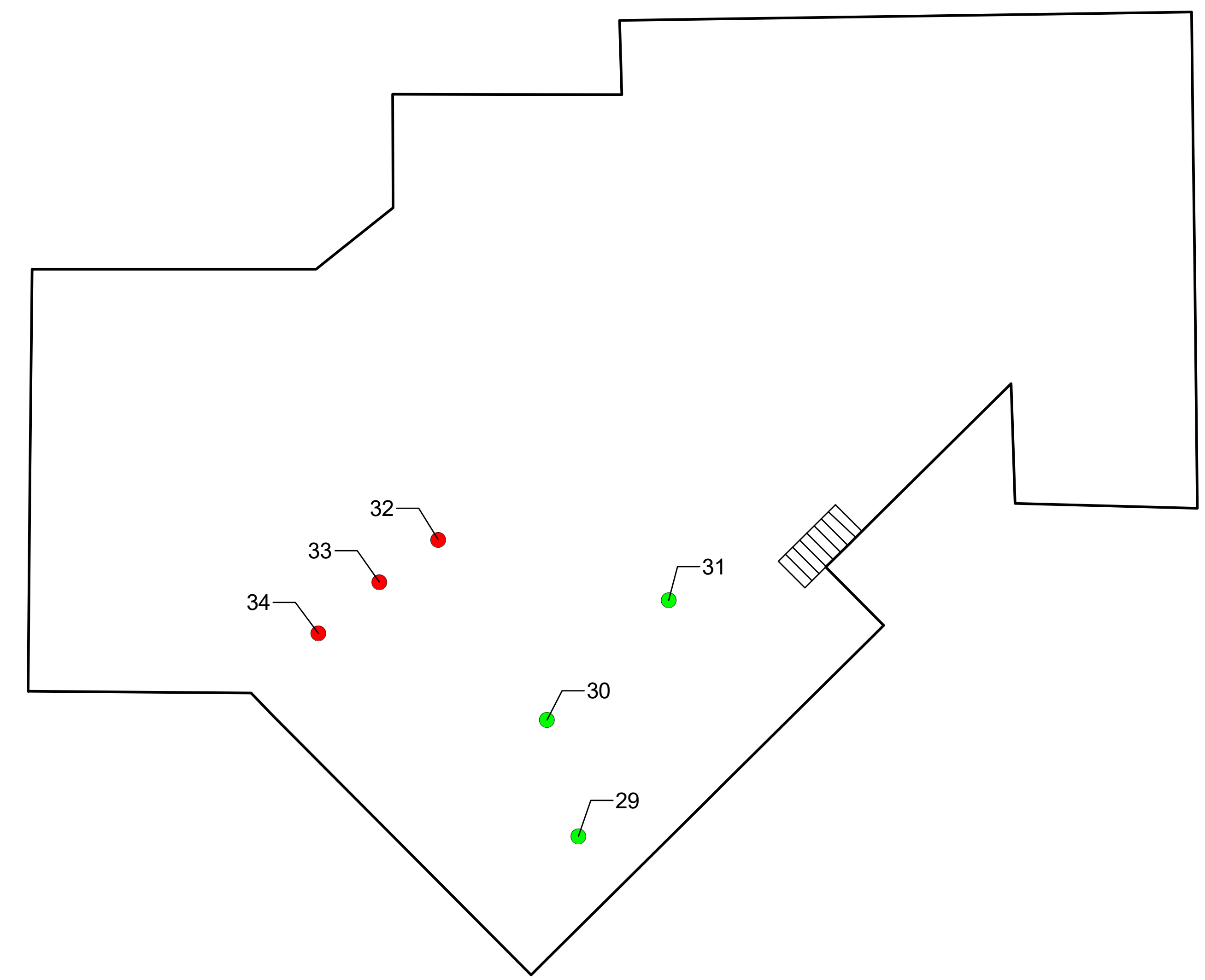
Sample Key Table

Key	Sample No.
Asbestos	
1	OB-FT-01
2	OB-FT-02
3	OB-FT-03
4	OB-FT2-01
5	OB-FT2-02
6	OB-FT2-03
7	OB-CWT-01
8	OB-CWT-02
9	OB-CWT-03
10	OB-CWT2-01
11	OB-CWT2-02
12	OB-CWT2-03
13	OB-CWT3-01
14	OB-CWT3-02
15	OB-CWT3-03
16	OB-DWJC-01
17	OB-DWJC-02
18	OB-DWJC-03
19	OB-SC-01
20	OB-CT-01
21	OB-CT-02
22	OB-CT-03
23	OB-CT2-01
24	OB-CT2-02
25	OB-CT2-03
26	OB-SF-01
27	OB-SF-02
28	OB-SF-03
29	OB-TS-01
30	OB-TS-02
31	OB-TS-03
32	OB-PS-01
33	OB-PS-02
34	OB-PS-03
35	OB-WG-01
36	OB-WG-02
37	OB-WG-03
38	OB-CL-01
39	OB-CL-02
40	OB-CL-03
41	OB-BUR-01
42	OB-BUR-02
43	OB-BUR-03
PCB	
P1	OB-PCB-1

First Floor



Basement / Crawl Space



Legend
- ACM sample location
- Non-ACM sample location
- PCB sample location
- Area containing LBP
- ACM flooring

ACM Asbestos-containing material
LBP Lead-based paint
PCB Polychlorinated biphenyl

N
Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 5
Sample Location Map - Office Building

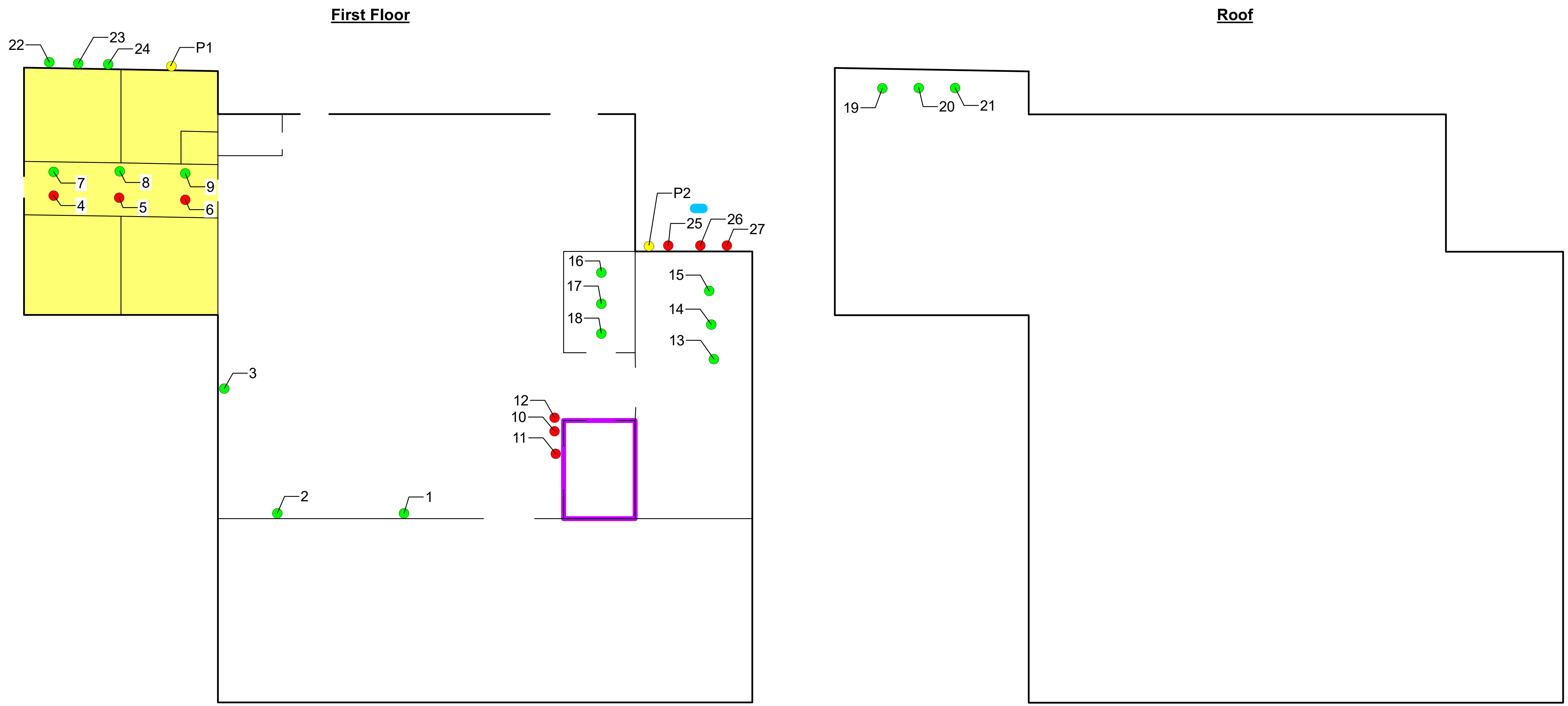
TETRA TECH

Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure3_OfficeBldg.mxd Note PDF edited for figure number only.

Sample Key Table

Key	Sample No.
Asbestos	
1	LB-DWJC-01
2	LB-DWJC-02
3	LB-DWJC-03
4	LB-FT-01
5	LB-FT-02
6	LB-FT-03
7	LB-CT-01
8	LB-CT-02
9	LB-CT-03
10	LB-CTB-01
11	LB-CTB-02
12	LB-CTB-03
13	LB-FB-01
14	LB-FB-02
15	LB-FB-03
16	LB-SF-01
17	LB-SF-02
18	LB-SF-03
19	LB-BUR-01
20	LB-BUR-02
21	LB-BUR-03
22	LB-CL-01
23	LB-CL-02
24	LB-CL-03
25	LB-CL2-01
26	LB-CL2-02
27	LB-CL2-03
PCB	
P1	LB-PCB-1
P2	LB-PCB-2



Legend

- ACM sample location
- Non-ACM sample location
- PCB sample location
- ACM cement board
- Area containing LBP
- ACM flooring

ACM Asbestos-containing material
LBP Lead-based paint
PCB Polychlorinated biphenyl

N
Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

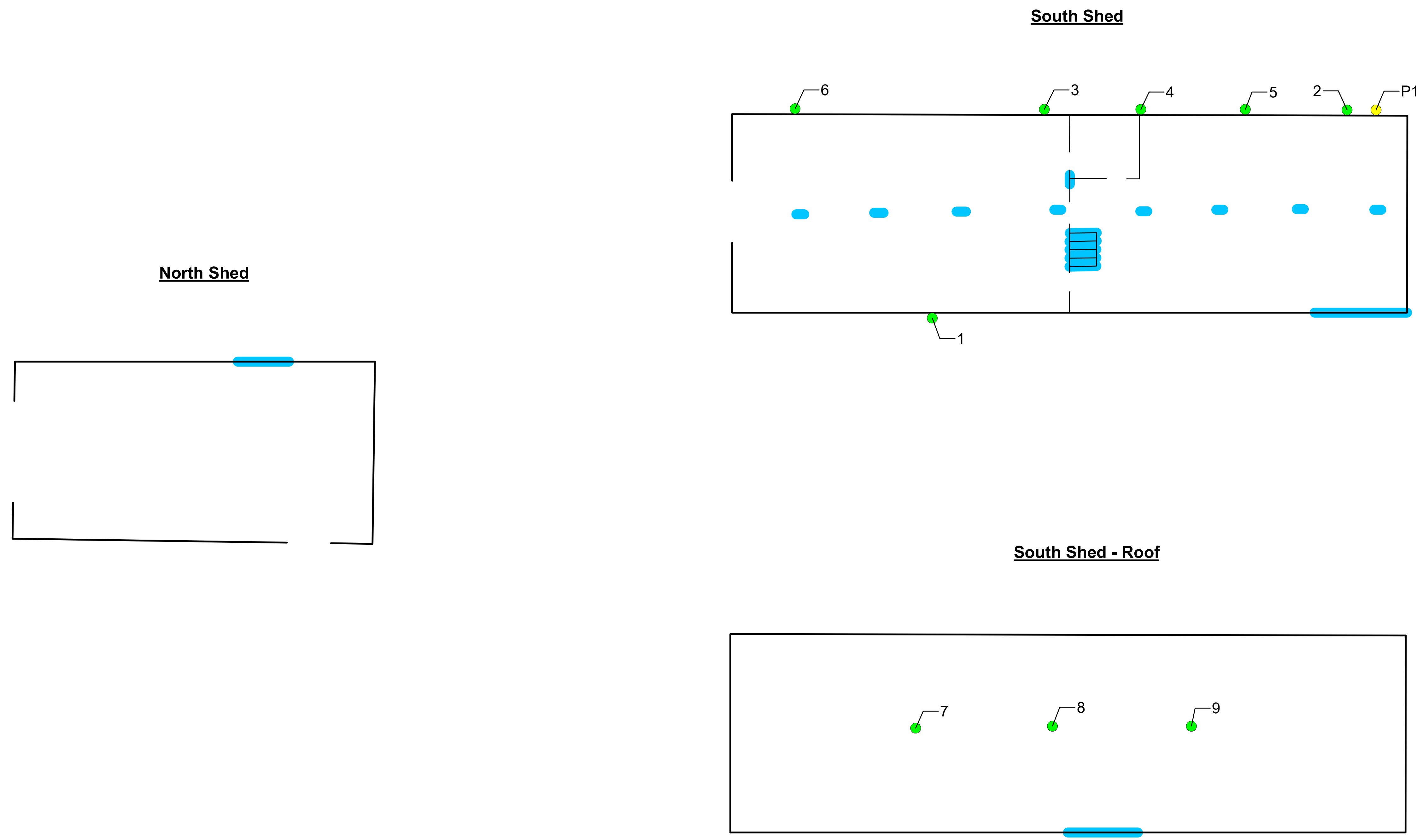
Figure 6
Sample Location Map - Laboratory

TETRA TECH

Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

Sample Key Table

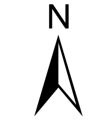
Key	Sample No.
Asbestos	
1	SS-WG-01
2	SS-WG-02
3	SS-WG-03
4	SS-CL-01
5	SS-CL-02
6	SS-CL-03
7	SS-AS-01
8	SS-AS-02
9	SS-AS-03
PCB	
P1	SS-PCB-1



Legend

- Non-ACM sample location
- PCB sample location
- Area containing LBP

ACM Asbestos-containing material
PCB Polychlorinated biphenyl



Not to Scale

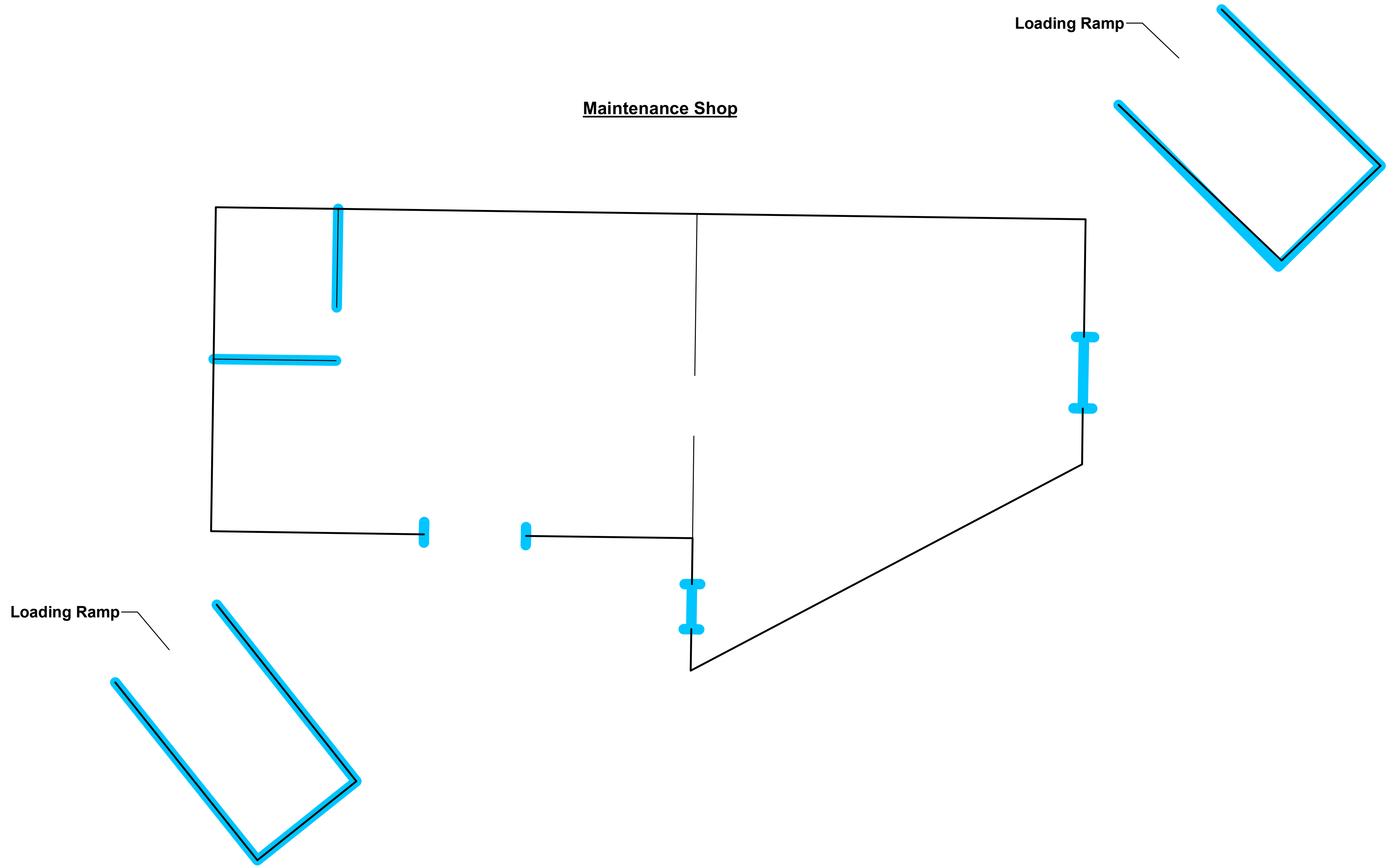
Wellsville Firebrick Plant
Wellsville, Missouri

Figure 7
Sample Location Map - Sheds

TETRA TECH

Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure5_Sheds.mxd Note PDF edited for figure number and remove LBP from acronyms only.



Legend

Area containing LBP

LBP Lead-based paint

Note: No suspect asbestos-containing material found for this building.

N

Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 8

Sample Location Map - Maintenance Shop

TETRA TECH

Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure6_MaintenanceShop.mxd Note PDF edited for figure number only.

Legend

Area containing LBP

LBP Lead-based paint

N

Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 9

Sample Location Map - Northwest Storage

TETRA TECH

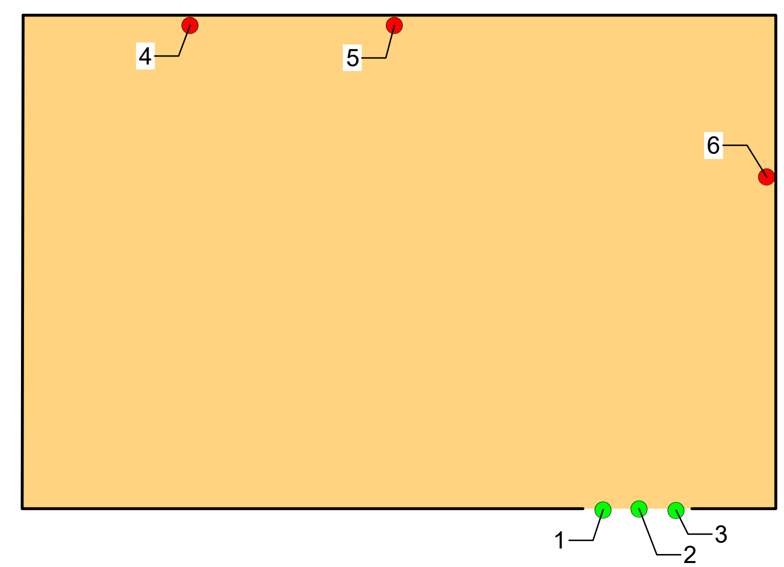
Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure7_NW_Storage.mxd Note PDF edited for figure number only.

Sample Key Table

Key	Sample No.
Asbestos	
1	SH-WC-01
2	SH-WC-02
3	SH-WC-03
4	SH-BUR-01
5	SH-BUR-02
6	SH-BUR-03

Scale House



Legend

- ACM sample location
- Non-ACM sample location
- ACM roofing material

ACM Asbestos-containing material

N
Not to Scale

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 10

Sample Location Map - Scale House

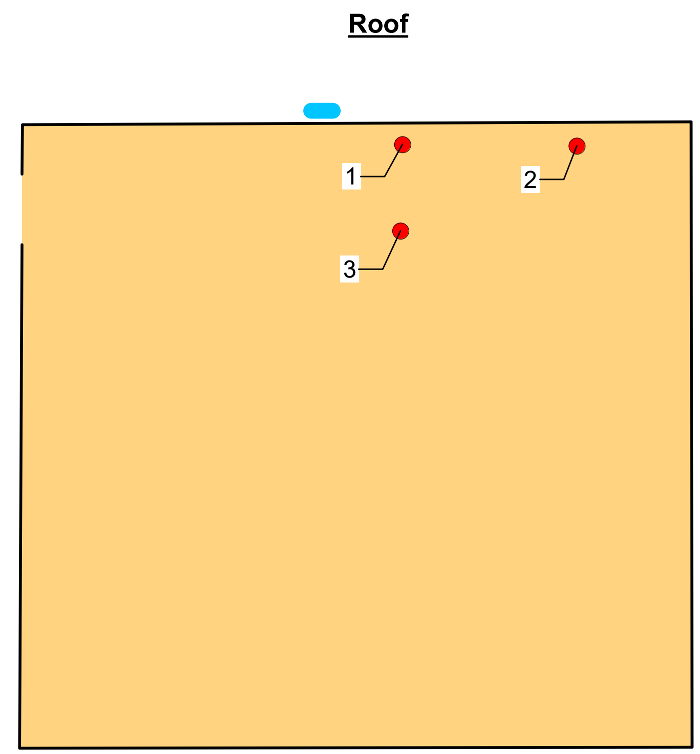
TETRA TECH

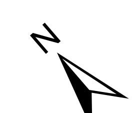
Date: 3/22/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure8_ScaleHouse.mxd Note PDF edited for figure number only.

Sample Key Table

Key	Sample No.
Asbestos	
1	PH-BUR-01
2	PH-BUR-02
3	PH-BUR-03





Legend

- ACM sample location
- Area containing LBP
- ACM roofing material

ACM Asbestos-containing material

LBP Lead-based paint

Wellsville Firebrick Plant
Wellsville, Missouri

Figure 11

Sample Location Map - Pump House

TETRA TECH

Date: 3/12/2021 Drawn By: Nick Wiederholt Project No: 103G65210190.04.03

X:\P\6521\0190\04\Projects\mxd\HAZMAT\Figure9_PumpHouse.mxd Note PDF edited for figure number only.