Burns & McDonnell
SINCE 1898

September 7, 2012

John Frey
Federal On-Scene Coordinator
U.S. Environmental Protection Agency, Region 7
Hazardous Substance & Oil Spill Response
Superfund Division
901 N. 5th Street
Kansas City KS, 66101

Re: Vapor Intrusion Mitigation System Design and Implementation Work Plan
[redacted]
PerkinElmer, Inc. Missouri Metals Site
Overland, Missouri

Dear Mr. Frey:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has prepared this Design and Implementation Work Plan as directed by PerkinElmer, Inc. (PerkinElmer) for the installation of vapor intrusion mitigation systems in the residences at [redacted], located near the Missouri Metals facility in Overland, Missouri (Site). This document describes the proposed design, establishes a scope of work, and presents a schedule for implementation.

Based on the August sampling results and PerkinElmer's desire to be proactive, we are also proposing to install vapor intrusion mitigation systems at the home at [redacted] and the apartment at [redacted]. These systems will be similar to the design presented for [redacted] because no sump is present in these residences. These system installations will occur on the same schedule as the other systems presented in this work plan.

SITE LOCATION AND DESCRIPTION

The Site is located at 9970 Page Avenue in Overland, Missouri, near the center of Section 31, Township 46 North, Range 6 East in St. Louis County, Missouri. The property area is approximately 3.5 acres located in an area that is primarily commercial and/or light industrial. An area of residential development is located southeast of the Site, across Meeks Boulevard (see Figure 1).

The residences at [redacted] are part of the Chicago Heights Boulevard Neighborhood in an unincorporated segment of St. Louis County, located immediately southwest of the Site (off-Site) (see Figure 1). The Chicago Heights Boulevard Neighborhood consists of a residential neighborhood of both single family and multi-family dwellings. Some of the residences have basements with sumps and sump pumps.

PROPOSED MITIGATION SYSTEMS

Prior to implementation, PerkinElmer will obtain an updated residential home access agreement with the Housing Authority of St. Louis County, allowing for the installation of the proposed mitigation systems for the residences at [redacted]

Sump Pump System Replacement/Retrofit & Sealing

Burns & McDonnell will replace or retrofit the existing sump pump systems at [redacted]. The residences at [redacted] do not have sumps. The replaced or retrofitted systems will include components for ensuring continuous operation, such as battery backup power supplies and high level/pump fault alarms. Once the final system is in place, the sump cover will be sealed airtight to prevent migration of vapors into indoor air. The cover will be fitted with a gasket to facilitate access to the pump.

Crack/Joint Sealing

Burns & McDonnell will seal significant cracks, joints, or other openings in the foundation that could allow soil vapor to migrate into indoor air at [redacted]. Openings will be sealed using a permanent and durable waterproof sealant. A plot plan for the lower floor (basement) of each residence is presented in Figures 2 through 4. Utility and structural features for each residence are included on each plot plan.

Subslab Depressurization Systems

Burns & McDonnell will install a subslab depressurization (SSD) system at each of the three residences. The basement floor slab will be core drilled and a small extraction pit will be excavated below the slab. A 3 or 4-inch inside diameter (ID) poly-vinyl chloride (PVC) riser pipe will begin at the extraction pit, exit the building above grade, and extend vertically to an exhaust point above the roof. An in-line fan will be installed in a serviceable location along the riser pipe outside the building. The fan will be equipped with an automatic shutoff switch to prevent burnout in the event of low air flow. A general schematic for the proposed SSD systems is presented in Figure 5.

As recommended in ASTM Standard E2121 – 12, *Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings*[1], the SSD fan and piping will be sized to maintain a minimum vacuum pressure field of 0.025 to 0.035 inches water column (in.-wc) (6 to 9 Pascals [Pa]) throughout the sub-slab when indoor and outdoor air pressure are equal. The initial fan and pipe sizes will be selected based on professional judgment and initial readings taken from the sub-slab. Pressure measurements recorded at multiple sub-slab monitoring points

[1] ASTM Standard E2121-12, "Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings," ASTM International, West Conshohocken, PA, 2012, DOI: 10.1520/E2121-12

will be used to verify the adequacy of the SSD equipment. If necessary, SSD system modifications including installation of a different fan, larger diameter piping, and/or additional extraction points will be implemented until the performance criteria are achieved.

The system installation will require a minimum of two visits to each of the residences. During the first visit, pressure measurements will be taken to determine the fan and pipe sizes, vent piping route, and number of extraction points. During the second visit, the system will be installed.

Following SSD installation, an information package will be prepared and provided to each residence owner or tenant. The package will include the following: a description of the SSD system and its basic operating principles; how the owner or tenant can check that the system is operating properly; how the system will be maintained and monitored and by whom; who to contact if the system stops operating properly; and copies of all building permits, contracts, warranties, standard operating procedures and maintenance manuals.

PERFORMANCE VERIFICATION

Burns & McDonnell will verify the effectiveness of the vapor intrusion mitigation systems via the periodic sampling events that will be conducted as part of the overall sampling plan for the Site.

SCHEDULE

Burns & McDonnell will initiate work upon receiving EPA approval of this system design and work plan and an updated access agreement from the Housing Authority of St. Louis County. The anticipated schedule following those approvals is as follows:

- Within two weeks of receipt of approvals (depending on contractor availability) – Sump pump system replacement/retrofit and sealing; crack and joint sealing; and initial SSD system installation visit.
- Within four weeks of receipt of approvals (depending on material availability) – completion of SSD system installation.

If you have any questions regarding the anticipated scope, please contact me at 314-682-1583.

Sincerely,

Tom Zychinski

Tom Zychinski, RG
Project Manager

Attachments

425 S. Woods Mill Road • Suite 300 • Chesterfield, MO 63017-3441
Tel: 314 682-1500 • Fax: 314 682-1600 • www.burnsmcd.com

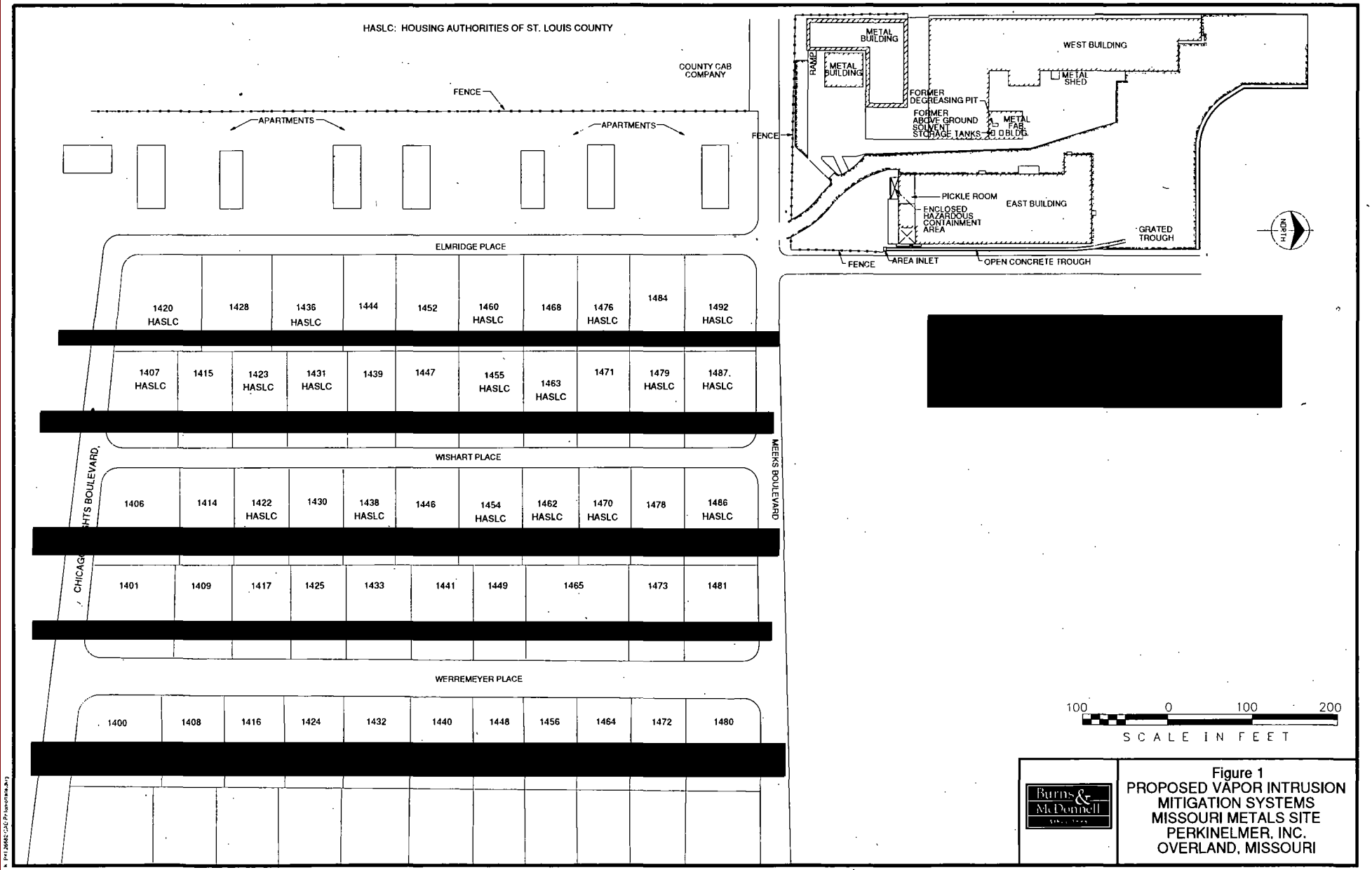

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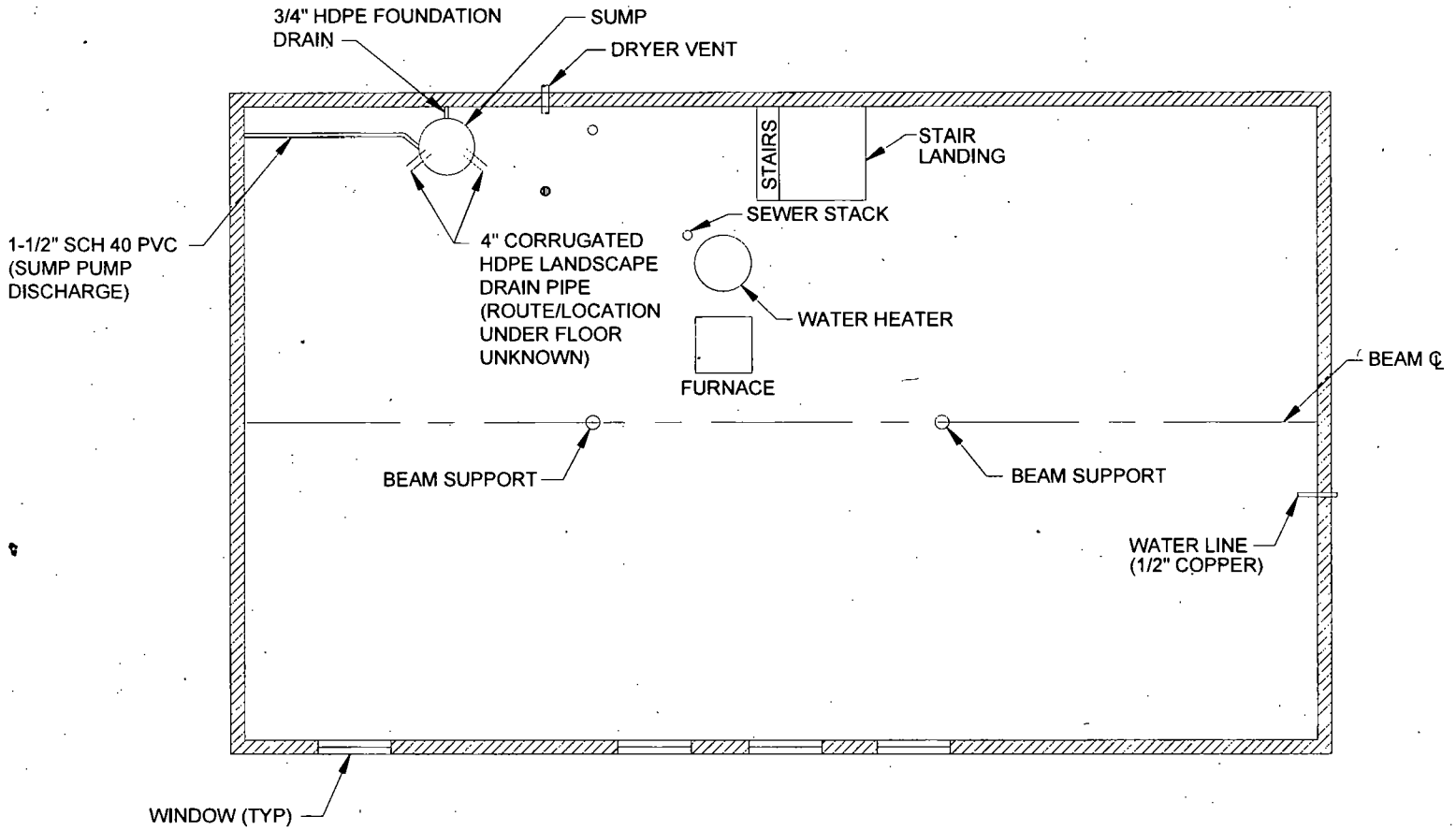
Figure 1
PROPOSED VAPOR INTRUSION MITIGATION SYSTEMS
MISSOURI METALS SITE
PERKINELMER, INC.
OVERLAND, MISSOURI



NOTES:

1. NOT ALL FEATURES DRAWN TO SCALE.
2. DEPICTION OF ALL SUBSURFACE FEATURES IS BASED ON OBSERVATION OF SURFACE FEATURES ONLY.

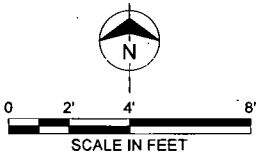


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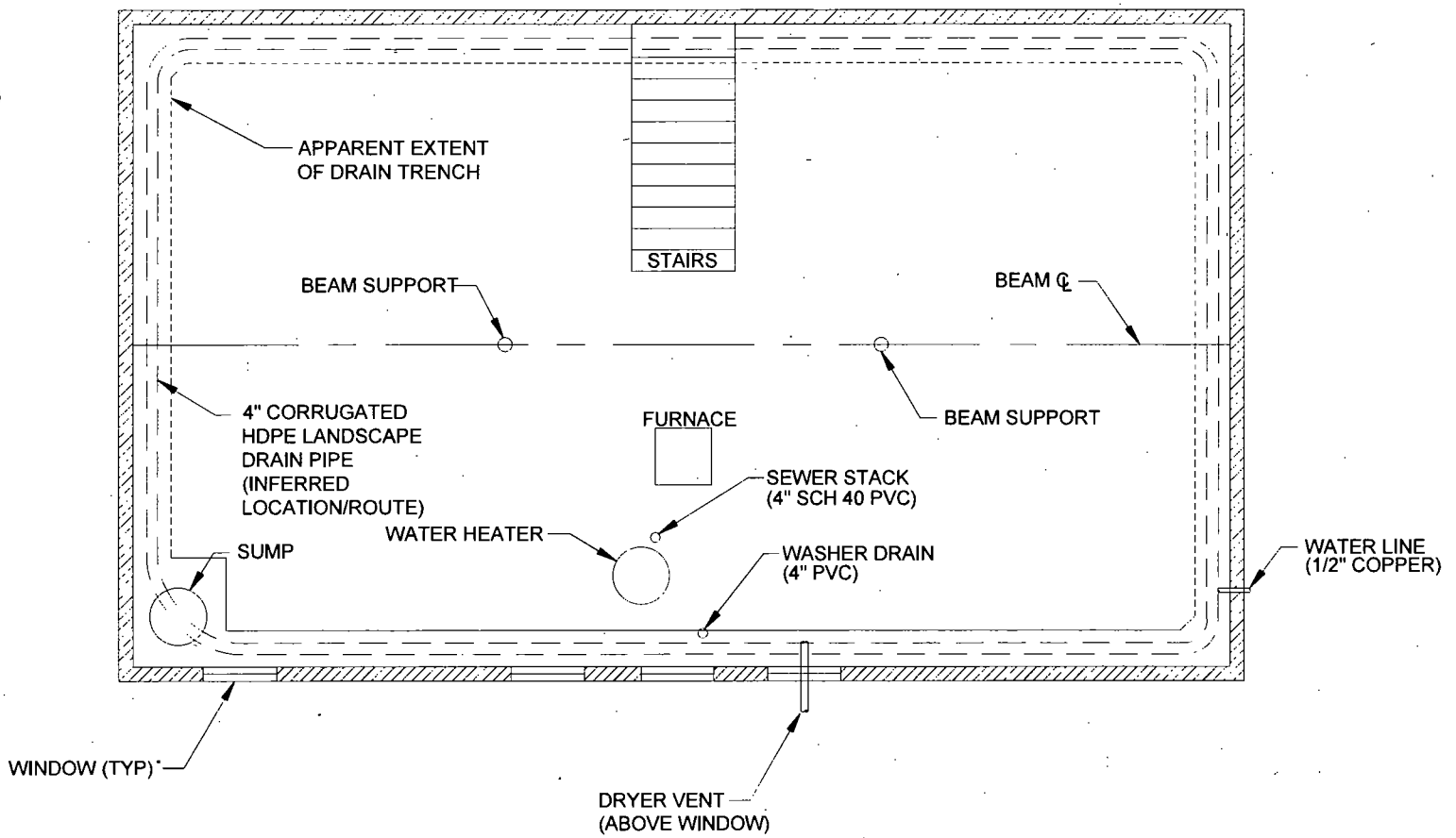
FIGURE 2

[redacted]

BASEMENT PLAN
MISSOURI METALS SITE
PERKINELMER, INC
OVERLAND, MISSOURI

C:\USERS\L_SAUCEDO\DESKTOP\MO_METALS\FIGURE 2_1479_WSHART



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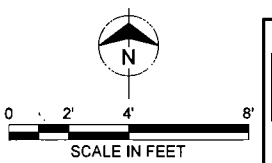

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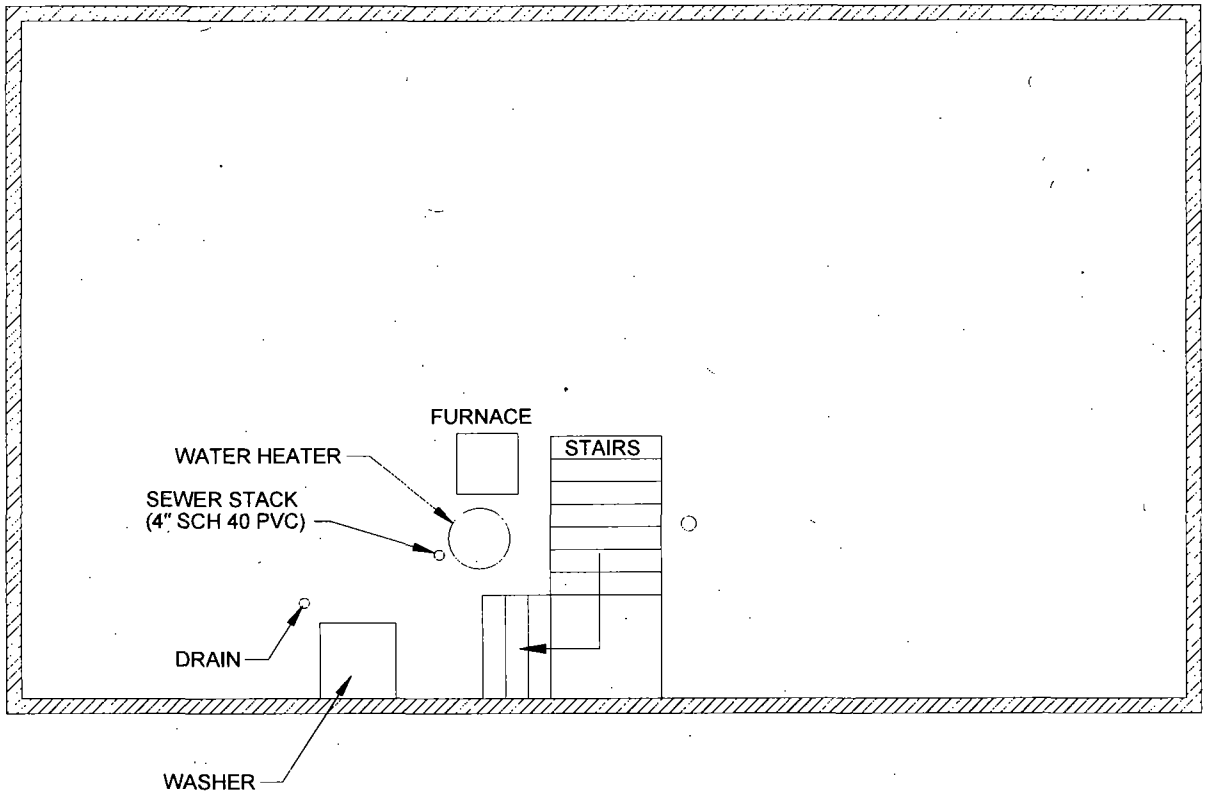
FIGURE 3

[redacted]

BASEMENT PLAN
MISSOURI METALS SITE
PERKINELMER, INC
OVERLAND, MISSOURI



NOT TO SCALE

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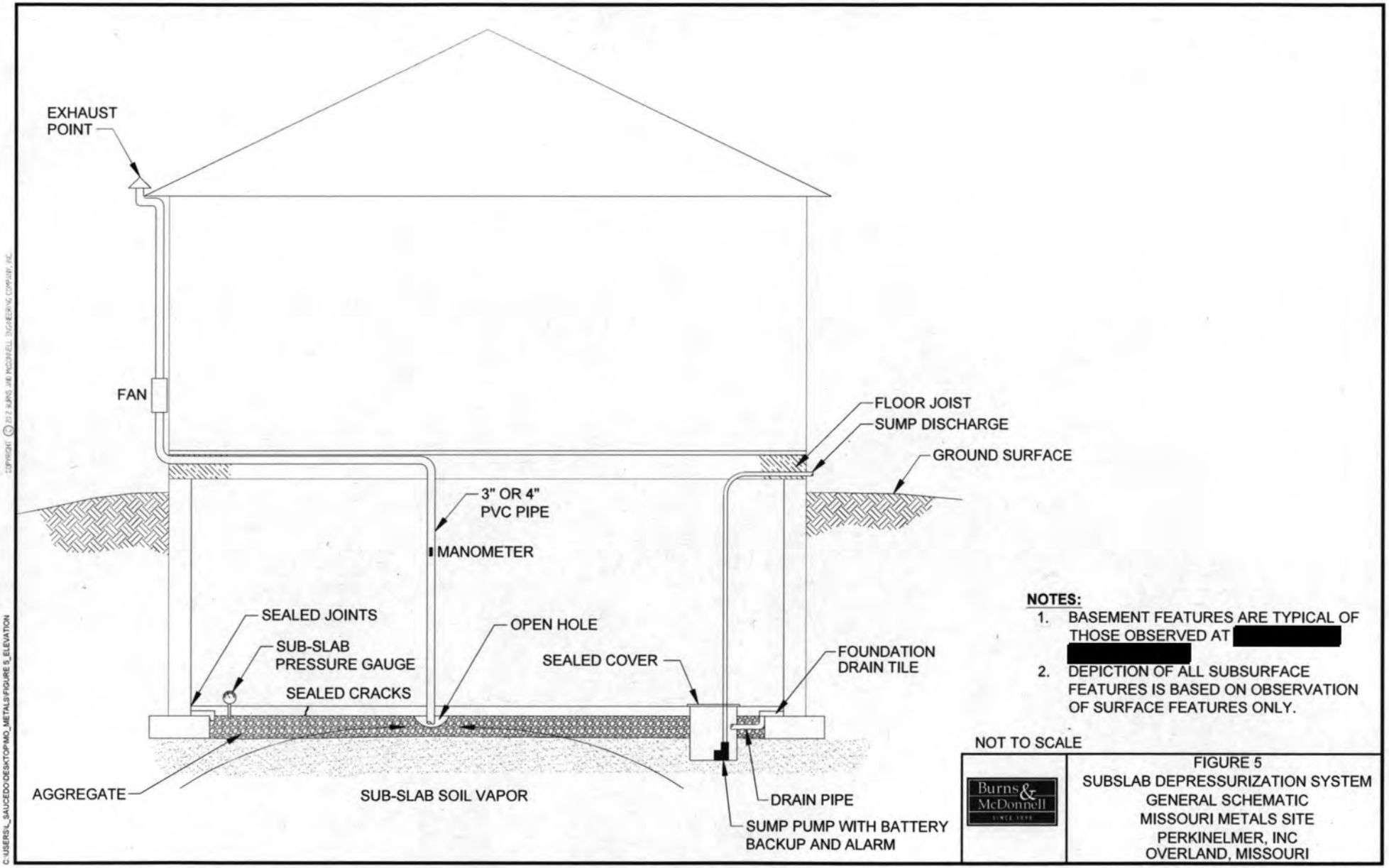
FIGURE 4

[redacted]

BASEMENT PLAN
MISSOURI METALS SITE
PERKINELMER, INC
OVERLAND, MISSOURI

C:\USERS\L_SAUCEDO\DESKTOP\MO_METALS\FIGURE 4_1478_ELMRIDGE



NOTES:

1. BASEMENT FEATURES ARE TYPICAL OF THOSE OBSERVED AT [redacted]
2. DEPICTION OF ALL SUBSURFACE FEATURES IS BASED ON OBSERVATION OF SURFACE FEATURES ONLY.

NOT TO SCALE

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FIGURE 5
SUBSLAB DEPRESSURIZATION SYSTEM
GENERAL SCHEMATIC
MISSOURI METALS SITE
PERKINELMER, INC
OVERLAND, MISSOURI