report.hw915164.2008-10-24.SVI-SSDS Work Plan.pdf DSS DEC

Moog Inc. • East Aurora, New York 14052-0018
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MOOG

ME Letter # 027-08
October 22, 2008

NYS Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999
Attention: Mr. David Szymanski

Dear Mr. Szymanski:

Attached is the Plant 11 Vapor Intrusion Work Plan created by URS. Moog will be installing a sub-slab de-pressurization system to eliminate any vapor intrusion potential from contaminated groundwater beneath Plant 11.

Please contact myself at (716) 805-2110 or Robin Young at (716) 687-4157.

Sincerely,

Christopher D. Russin

Christopher D. Russin
Environmental Process Engineer

CC: Cameron O'Connor, NYSDOH
Robin Young, Moog
Dave Bauchat, Moog

URS

October 3, 2008

Mr. Christopher Russin
Environmental Process Engineer – Corporate Group
Moog, Inc.
Plant 3B
Jamison Road
East Aurora, NY 14052

RE: Vapor Intrusion Mitigation Plan – Plant 11

Dear Mr. Russin:

URS Corporation (URS) is please to provide this Vapor Intrusion Mitigation Plan outlining the approach for installation of a sub-slab depressurization (SSD) System at Plant 11 at the Moog East Aurora, NY Facility.

This Mitigation Plan was prepared subsequent to discussions with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).

Should you have any questions or comments, please contact me directly.

Sincerely,

URS Corporation – New York

Sheldon S. Nozik, P.G., CHMM
Project Manager

Copies: Jon Sundquist, PhD - URS
John Boyd - URS

Attachment: Soil Vapor Intrusion Mitigation Plan

File: 11175046

URS Corporation
77 Goodell Street
Buffalo, NY 14203
Tel: 716.856.5636
Fax: 716.856.2545

Mitigation Plan
Building 11 Soil Vapor Intrusion Mitigation
Moog, Inc.
East Aurora, New York

1.0 INTRODUCTION

Moog, Inc. is submitting this mitigation plan to describe the planned vapor mitigation activities at the Moog, Inc. Building 11 at the East Aurora, New York facility. The mitigation system will comprise a Sub-slab Depressurization (SSD) system to minimize the extent to which subslab vapors could migrate into the building. Figure 1 shows the location of the East Aurora facility.

The following sections of this plan provide a background on the sampling conducted in the vicinity of Building 11, investigations completed to assess the nature and extent of groundwater and soil vapor impacts, and the proposed mitigation measures to prevent contaminated soil vapor from impacting personnel working in Building 11.

2.0 BACKGROUND

An underground storage tank (UST) was previously located outside of and east of Building 11. Apparent releases from this UST resulted in groundwater contamination with solvents, principally 1,1-dichloroethane (1,1-DCA) with lower levels of other chlorinated ethanes, chlorinated ethenes, and freon. Historically, monitoring well MW-2B (Figure 2), located east of Building 11, has had the highest concentration of chlorinated solvents. Based on concentrations detected in MW-6 and to a lesser extent MW-4, the extent of the groundwater plume was inferred (by others) to be as shown by the dashed line in Figure 2. A groundwater collection and treatment system was subsequently installed and has been operating for over ten years, resulting in a significant decrease in solvent concentrations in the groundwater. However, 1,1-DCA levels have remained as high as 210 µg/L in monitoring well MW-2B suggesting that soil vapor intrusion (SVI) may be an exposure pathway of concern at this site. Concentrations in wells MW-4 and MW-6, located north and northeast of the spill areas, respectively, show lower levels of 1,1-DCA, but are located downgradient of the groundwater collection trench and are presumed to not reflect groundwater concentrations beneath the Building 11 building slab.

3.0 SOIL VAPOR INTRUSION INVESTIGATION

A soil vapor intrusion investigation was conducted by URS Corporation (URS) at Building 11 in May 2008 to assess the potential of soil vapor contamination of the eastern portion of Building 11. This SVI study was limited in scope to Building 11 in the area of the inferred groundwater plume extent, as shown in Figure 2. Because the source of the groundwater plume is located outside of, and side-gradient to, the building, Moog elected to pursue an iterative approach to evaluating vapor intrusion, sampling just subslab vapors. The SVI sampling consisted of the collection of three sub-slab samples from the east end of Building 11, near the source of solvent groundwater contamination. URS provided a letter report to Moog, Inc. on July 14, 2008 that documented the procedures and results of the soil vapor intrusion investigation.

On May 19 and 20, 2008, URS collected three 24-hour sub-slab samples in Building 11 at the locations shown on Figure 2. Sub-slab samples were designated Moog-SSA, Moog-SSB, and Moog-SSC. A duplicate sample of sample Moog-SSA was also collected and designated 20080519-FD-1. Each canister was analyzed for volatile organic compounds (VOCs) by EPA Method TO-15. Sampling procedures followed those specified in the URS Corporation Field Sampling Plan (FSP) dated February 2008, and in general accordance with the October 2006 New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York. (NYSDOH Guidance).

Analytical results from the soil vapor intrusion investigation are provided below in Table 1

Table 1
Soil Vapor Intrusion Results
Moog Building 11
East Aurora, NY

Parameter	Sample ID Numbers			
	SSA	SSA (Duplicate)	SSB	SSC
1,1,1-Trichloroethane (1,1,1-TCA)	68	65	610	420
1,1,2-Trichloro-1,2,2-trifluoroethane	650	640	120	59
1,1-Dichloroethane (1,1-DCA)	2.2 J	2.2 J	2.0 J	0.56 J
1,1-Dichloroethene	5.2 U	5.4 U	6.7 U	5.5 U
1,2-Dichloroethene (cis)	5.2 U	5.4 U	6.7 U	5.5 U
1,2-Dichloroethene (trans)	5.2 U	5.4 U	6.7 U	5.5 U
Tetrachloroethene (PCE)	33	33	140	71
Trichloroethene (TCE)	18	18	29	4.6
Vinyl chloride	3.4 U	3.5 U	4.3 U	3.5 U

All results reported in $\mu g/m^3$
U - Not detected above the reported quantitation limit
J - The reported concentration is an estimated value

4.0 MITIGATION

The subslab levels of PCE, and 1,1,1-TCA are elevated enough such that if these compounds were also present at greater than 3 $\mu g/m^3$ in indoor air, then the NYSDOH Guidance document on Vapor Intrusion (NYSDOH 2006) would call for Moog to consider mitigation actions. Rather than perform additional sampling to determine whether such conditions exist, Moog has elected to conservatively move straight to mitigation via installation of an SSD system at the eastern portion of Building 11. The SSD system will consist of a minimum of three, 4-inch diameter, Schedule 40 PVC pipes (suction points) that penetrate the building's concrete floor and are connected to a suction fan. The locations of the three proposed suction points are shown on Figure 3. Operation of the suction fan, which will be mounted outside of the building, creates a vacuum (negative pressure zone) beneath the building slab that creates a pressure gradient from above the slab to below the slab. When such a gradient exists, sub-slab vapors do not migrate across the slab. The SSD system will be designed to be continuously operated until the groundwater contamination plume has been remediated. Construction of the SSD system will generally follow the

recommendations of the NYSDOH Guidance. A drawing of the major components of the SSD system is provided in Figure 4.

One of the suction points is located in a small addition that is separated from the main portion of the building by a structural footer. The remaining two additional suction points are located in the main portion of the building, and adjacent to roof support columns that will be used to facilitate the routing of the PVC pipe. Placement of the three suction points is designed to create a negative pressure area under the slab in the vicinity of the groundwater plume, the source of the contaminated soil vapor. The locations of the two western suction points are expected to provide a pressure field extension well beyond the inferred extent of the groundwater plume, thus is conservative in its ability to mitigate potential exposures to vapors from the groundwater plume.

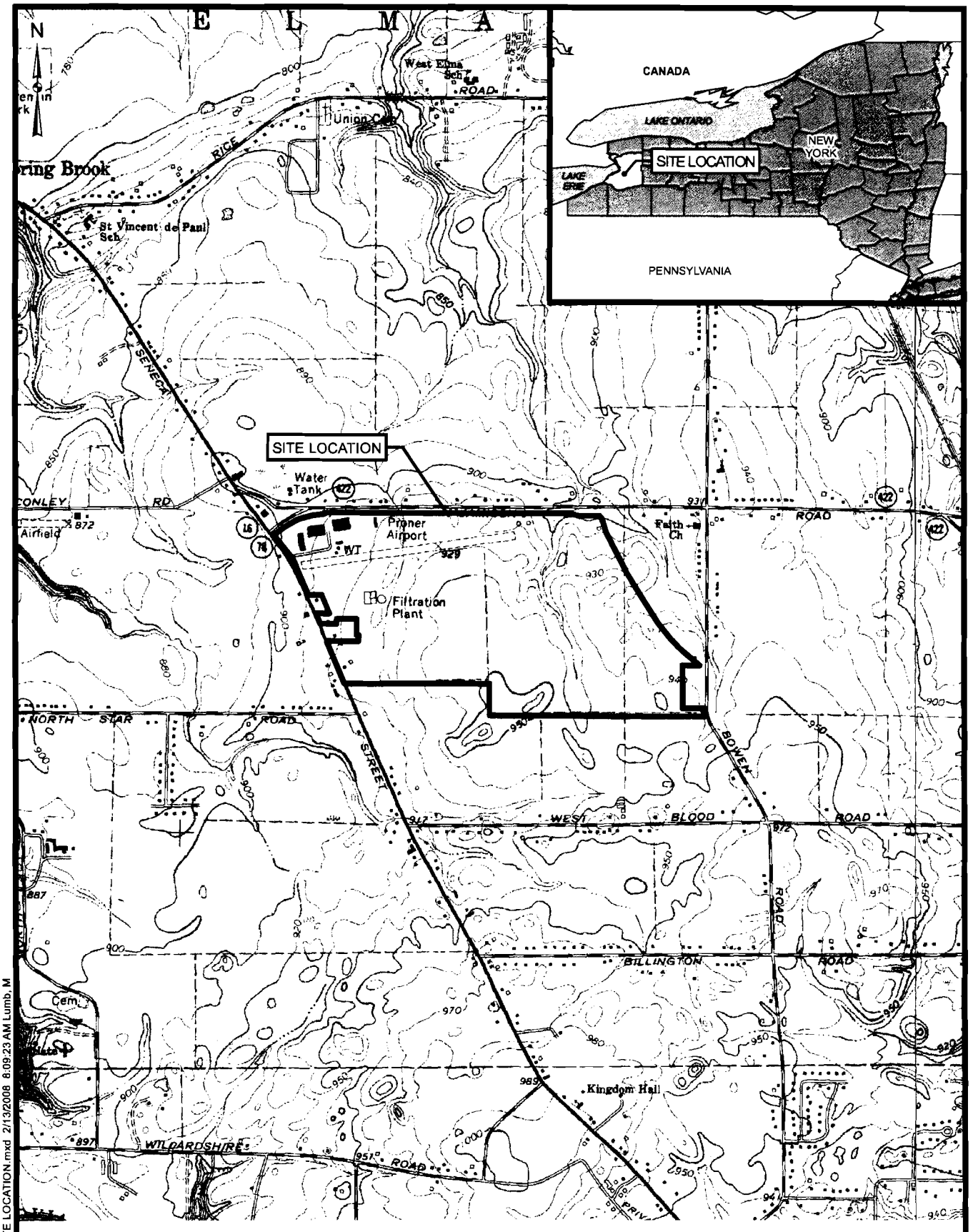
Following construction of the SSD system, subslab pressures will be measured to insure that the zone of negative pressure below the slab is adequate to address the plume of contaminated groundwater. Pressures will be measured at the western edge of the building, as well as 10-20 feet beyond the western boundary of the plume as shown in Figure 2. The goal of the SSD system will be to provide a minimum negative pressure of 0.004 inches of water column in the area of the groundwater plume. Based on the knowledge of Building 11 construction, communication testing prior to design is not considered necessary. Should they be needed, additional suction points would be installed to provide an acceptable pressure field extension.

The SSD system will be installed by a qualified contractor that has been selected using a bidding process. URS will oversee the installation of the system. Upon completion, URS will prepare a letter report documenting the installation and reporting the measured pressure field extension. It is anticipated that SSD system construction can begin within three weeks of agency approval of this Mitigation Plan.

5.0 REFERENCES

New York State Department of Health, 2006 "Guidance for Evaluating Soil Vapor Intrusion in the State of New York"

FIGURES

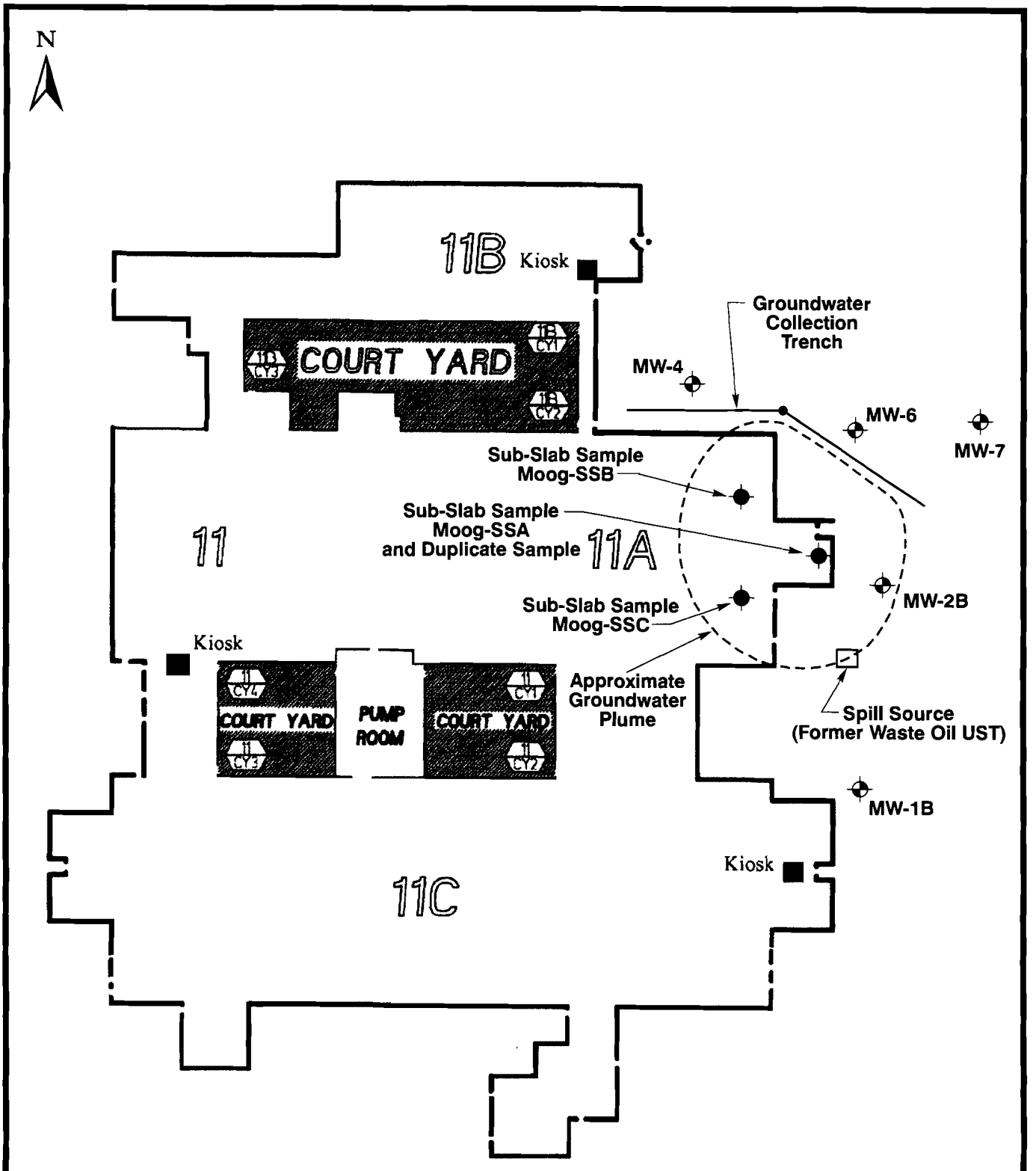


SOURCE:
USGS 7.5 Minute Topographic Quadrangles
Orchard Park - 1965 East Aurora - 1965

2,000 0 2,000 Feet

J:\11175046.00000\DBIGIS\SITE LOCATION.mxd 2/13/2008 8:09:23 AM Lumb, M

URS	SITE LOCATION MAP MOOG, INC EAST AURORA, NEW YORK	FIGURE 1



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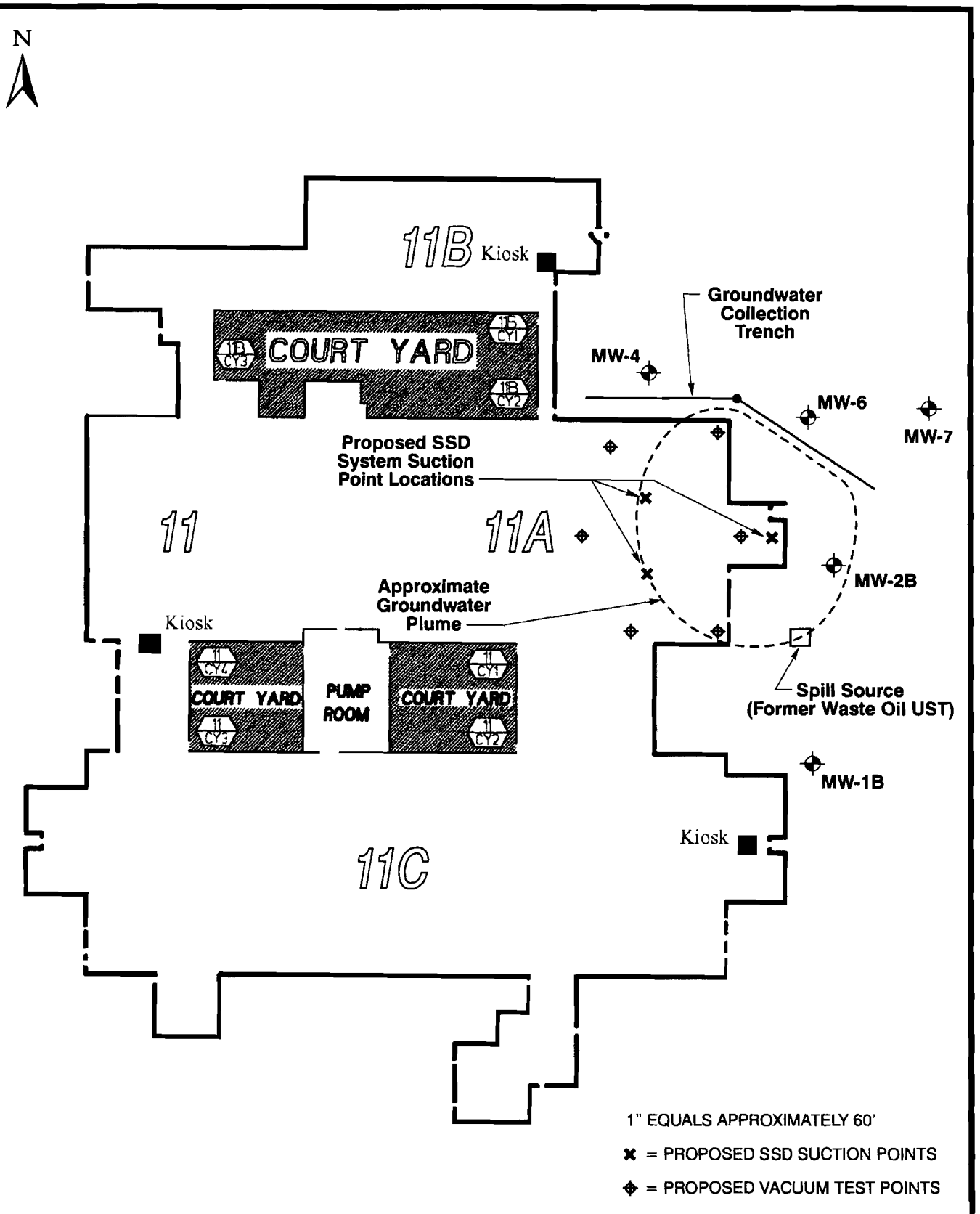
URS	MOOG, INC. SAMPLE LOCATION MAP	FIGURE 2



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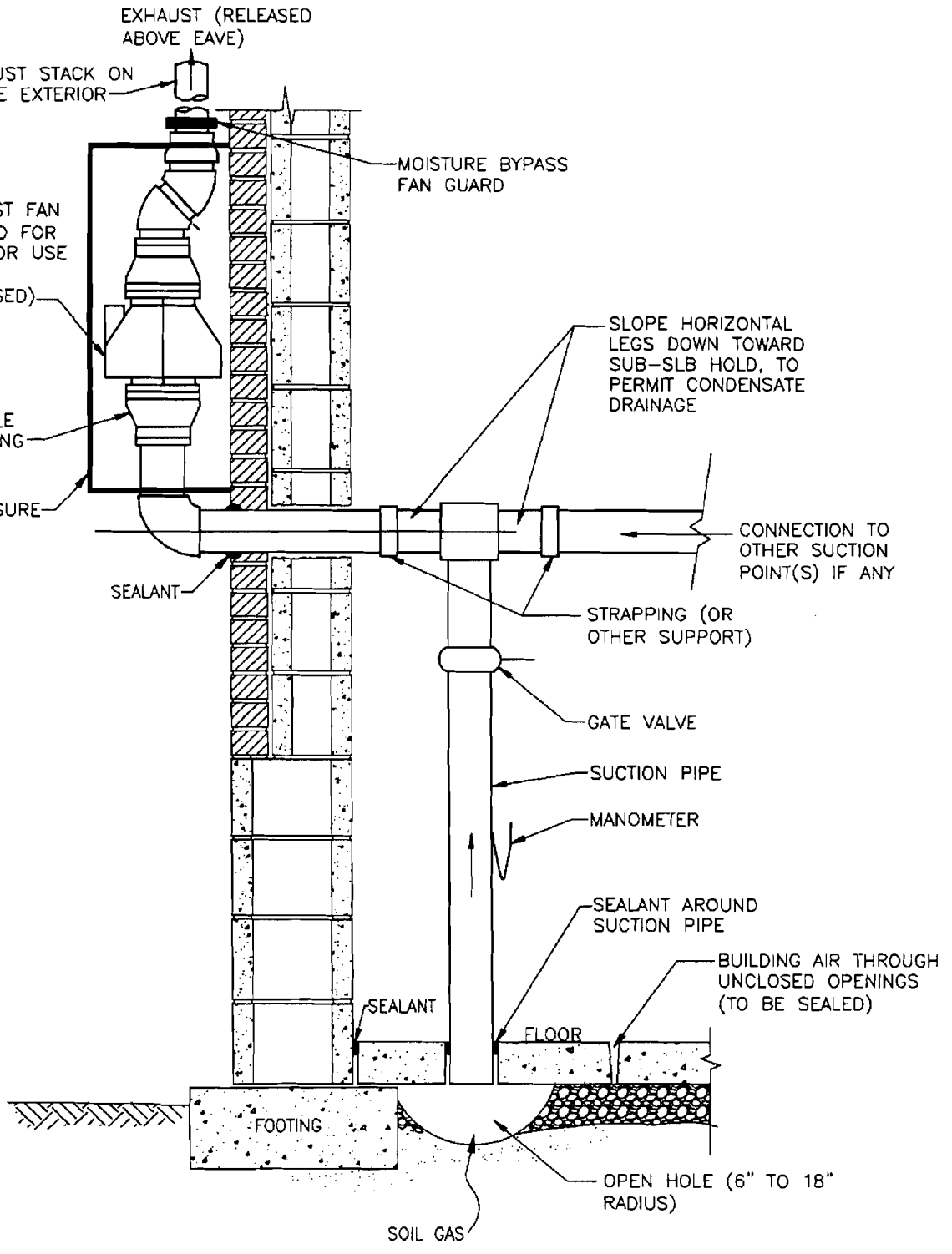
URS

MOOG, INC.
PROPOSED LOCATIONS OF SSD SYSTEM SUCTION POINTS AND VACUUM TEST POINTS

FIGURE 3

Q:\Sundquist, Jon\Figure 2\FIGURE 2.dwg 9/17/08



NOT TO SCALE

FIGURE 2

URS

MOOG, INC., SSD SYSTEM INSTALLATIONS
TYPICAL DEPRESSURIZATION VENT AND EXHAUST PIPING

FIGURE 4