

December 7, 2023
File No. 25222269.00

Ms. Jennifer Borski
Wisconsin Department of Natural Resources
625 E. County Road Y, STE. 700
Oshkosh, WI 54901-9731

Subject: Inspection of Vapor Mitigation System at Off-Site Commercial Property
Golden Flame Restaurant, 2604 Custer St, Manitowoc, WI 54220
Re: Former WI DOT Susies Restaurant – LGU-SL, WDNR BRRTS #02-36-000516

Dear Ms. Borski:

SCS Engineers (SCS) has prepared this report to summarize the inspection and vacuum verification performed for the vapor mitigation system (VMS) installed at the Golden Flame Restaurant in Manitowoc, Wisconsin (**Figure 1**). The VMS is maintained to prevent migration of chlorinated volatile organic compound (CVOC) vapors into the building. The continuing obligations to maintain the VMS are summarized in a Wisconsin Department of Natural Resources (WDNR) letter dated September 30, 2021. The VMS inspection work and preparation of this report were performed under the Vapor Intrusion Zone Contract (VIZC) at the request of WDNR.

VAPOR MITIGATION SYSTEM INSPECTION

SCS visually inspected and photographed the VMS on October 9, 2023, including the VMS fan, piping, manometer, alarm, pickup points, sump seal, exhaust, vacuum observation points, and building floor. The VMS alarm was tested and produced both visual and audible alerts. The VMS components appeared to be in working order with no damage or obstructions. The floor appeared to be in good condition with no significant cracks or damage. The October 2023 vacuums suggest an approximate 40 percent decrease in system vacuum since 2019, but still indicate adequate pressure field extension. The decreasing system vacuums may be due to VMS fan wear or unidentified vacuum leakage.

WDNR inspection form 4400-321, including SCS photos of various VMS components, is included in **Attachment A**. October 9, 2023, and prior VMS vacuum measurements are summarized in **Table 1**.

RECOMMENDATIONS

Based on our October 9, 2023 inspection, it is our opinion that the VMS appears to be in working order and requires no maintenance or repairs at this time.



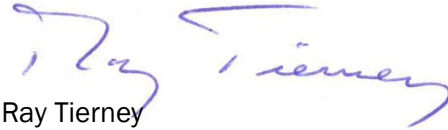
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Please feel free to contact Robert Langdon at (608) 212-3995 or rlangdon@scsengineers.com if you have any questions or comments regarding the inspection.

Sincerely,



Robert Langdon
Senior Project Manager
SCS Engineers



Ray Tierney
Vice President
SCS Engineers

REL/AJR_lmh/RT

Attachments: Table 1 – VMS Fan and Pressure Field Extension Testing Results
Figure 1 – Vapor Mitigation System
Attachment A – VMS Inspection Log, Form 4400-321

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**Table 1. VMS Fan and Pressure Field Extension Testing Results
Golden Flame Family Restaurant - Manitowoc, Wisconsin
SCS Engineers Project #25222269.00 (WDNR VIZC)**

| Date | VMS Manometer | VOP-1 | VOP-2 | VOP-3 |
|----------------------|----------------------|--------------|--------------|--------------|
| 10/4/2019 | 1.4 | -0.258 | -0.225 | -0.350 |
| 12/2/2019 | 1.3 | -0.278 | -0.285 | -0.288 |
| 2/11/2020 | 1.0 | -0.206 | -0.210 | -0.216 |
| 11/29/2022 | 1.0 | -0.278 | -0.279 | -0.281 |
| 10/9/2023 | 0.8 | -0.161 | -0.167 | -0.183 |
| Performance Standard | NA | -0.004 | -0.004 | -0.004 |

Abbreviations:

VMS = Vapor Mitigation System

NA = Not Applicable

Notes:

Vacuums in inches of water.

VMS vacuum from manometer on Pickup Point 1.

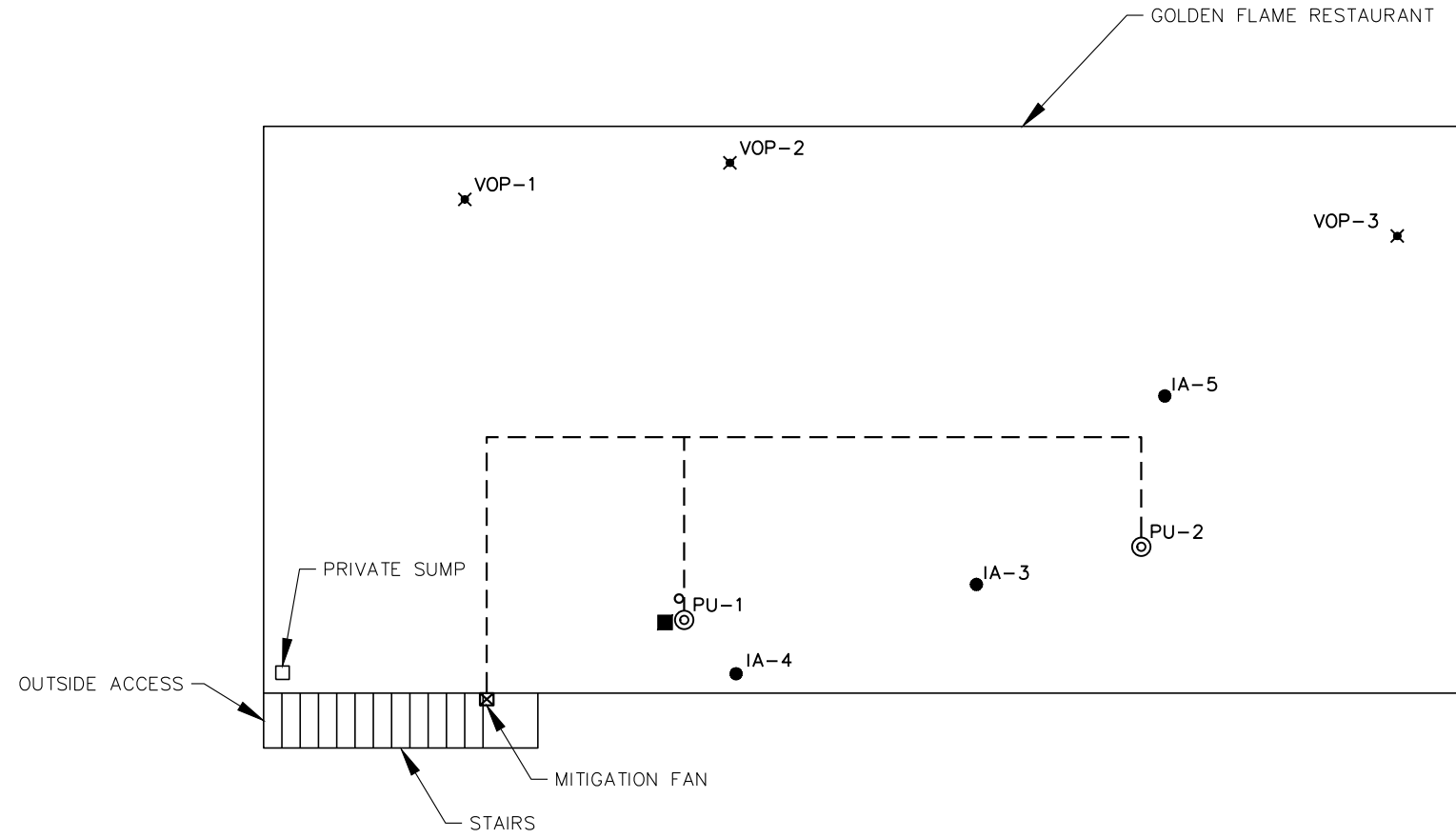
Sub-slab vacuums for VOP-1 through VOP-3 measured using digital manometer.

Performance standard from Wisconsin Department of Natural Resources January 2018 RR-800 vapor intrusion guidance document, Appendix D Commissioning Guidelines for Active Depressurization Systems.

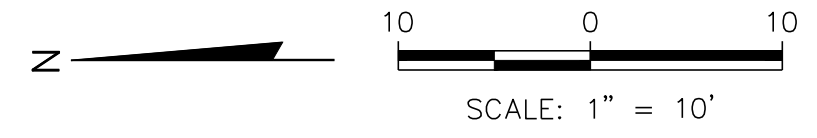
| | | | |
|-----------------|------------|-------|-------------------|
| Created by: | <u>REL</u> | Date: | <u>9/9/2020</u> |
| Last Rev by: | <u>REL</u> | Date: | <u>10/10/2023</u> |
| Checked by: | <u>AJR</u> | Date: | <u>11/28/2023</u> |
| Proj Mgr QA/QC: | <u>REL</u> | Date: | <u>12/7/2023</u> |


I:\25222269.00\25222269.00 Golden Flame VMS Inspection\Deliverables\VMS Inspection_2023\[Table 1 - VMS Vacuum and Pressure Field Extension Testing Summary_231010.xlsx]Vapor Intrusion

I:\2522269.00\2522269.00 Golden Flame VMS Inspection\Drawings\Vapor System.dwg, 12/7/2023 11:54:52 AM



- LEGEND
- INDOOR AMBIENT AIR TESTING LOCATION
 - ⊙ VAPOR PICK-UP POINT
 - ✕ VACUUM OBSERVATION POINT
 - VACUUM MANOMETER
 - VAPOR MITIGATION SYSTEM ALARM
 - - - 3" DIA. PVC MITIGATION PIPE



| | | | | |
|---|-------------------------|-----------------|--|--|
|  WISCONSIN DEPARTMENT OF NATURAL RESOURCES 2984 SHAWANO AVENUE GREEN BAY, WI 54313 | PROJECT NO. 25222269.00 | DRAWN BY: KP | SUSIE'S RESTAURANT-LGU-WIDOT 1020 SOUTH 26TH STREET MANITOWOC, WISCONSIN | VAPOR MITIGATION SYSTEM GOLDEN FLAME RESTAURANT 2604 CUSTER STREET, MANITOWOC, WISCONSIN |
| | DRAWN: 01/30/2020 | CHECKED BY: REL | ENGINEER | SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830 |
| REVISED: 12/07/2023 | APPROVED BY: REL | REL 12/07/2023 | FIGURE 1 | FIGURE 1 |

Attachment A

VMS Inspection Log, Form 4400-321

Notice: In accordance with s. NR 727.05(1)(b)3., Wis. Admin. Code, use of this form for documenting the inspections and maintenance of certain vapor-related continuing obligations is required. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Public Records law [ss. 19.31-19.39, Wis. Stats.].

Directions: This form was developed to provide the results of a site inspection of a vapor related continuing obligation, typically a vapor mitigation system. See the approval letter for this site for requirements regarding the submittal of this form to the Department of Natural Resources. A copy of this inspection log is required to be maintained either on the property, or at a location specified in the approval letter. The letter may be found in the database, [BRRTS on the Web](#), by searching for the site using the BRRTS ID number and then looking in the "Action" section for code 56.

Activity (Site) Name: WI DOT Susie's Restaurant (Former) - LGU-SL BRRTS No.: 02-36-000516
 Address Being Inspected (e.g., 123 N. Main St.): 2604 Custer St, Manitowoc, WI 54220 Date of Inspection: 10/09/2023
 Inspection Performed By (Name & Title/Company): Robert Langdon, Project Manager, SCS Engineers


When submittal of this form is required, submit an electronic version or a scanned copy of this completed form to the [RR Submittal Portal](#).

HOW TO USE THIS FORM

The Activity (Site) Name, BRRTS No., Address Being Inspected and Date of Inspection entered above will auto-populate the table. Complete only the applicable rows/components. Check "Not Applicable" for components that do not apply. For example, if there is no sump sealed and vented as part of the system, check "Not Applicable" in the "NOTES" section for that component.

Multiple components: For systems with multiple components (e.g., two manometers or two fans), add an additional row for that component by clicking the "+" (plus) symbol at the end of the row. After a system component row is added, a "-" (minus) symbol is shown so the added row may be deleted.

Photos: Click on the placeholder photo shown in each row to replace it with your own site-specific photo. Site-specific photos are optional but strongly recommended. Enter specific details and observations within the "NOTES" section to assist the DNR in understanding status of the system components.

| SYSTEM COMPONENT | | | | Date of Inspection: |
|--|--|---|--|---|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? |
| <p>Manometer or Differential Pressure Gauge</p> | <p>Measures differential pressure between vacuum side of vent pipe and indoor space.</p> <p>This measurement confirms there is a vacuum being pulled by the fan.</p> | <p>Liquid Level on Manometer or Gauge</p> | <p>Liquid level in manometer should be offset (not level with each other).</p> | <p>A change in liquid level indicates a change in the vacuum below foundation. This could be caused by failure of fan, blockage of vent pipe, change in water level below building, or other conditions.</p> <p>Hire a professional to identify cause and repair if needed.</p> |
| <p>PHOTO</p>  | | | <p>NOTES: (Record the reading on the gauge. Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Pickup Point No. 1 with liquid manometer and alarm. Manometer reads 0.8 inch water vacuum. Tested the alarm by temporarily removing the alarm vacuum tubing from the pickup point. Both the alarm light and the audible alert are working properly.</p> | |

BRRTS No. 02-36-000516

Site Name: WI DOT Susie's Restaurant (Former) - LGU-SL


Address Being Inspected: 2604 Custer St, Manitowoc, WI 54220

Vapor Mitigation System Inspection Log

Form 4400-321 (R 03/22)

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|------------------|---|---|---|--|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Fan | <p>Fan creates a vacuum and lowers pressure below foundation.</p> <p>The fan also removes soil gases from below foundation for discharge to atmosphere.</p> | <p>Fan Operation</p> <p>Fan Location</p> <p>Motor Noise</p> | <p>Fan is on.</p> <p>Fan mounted outside & secure.</p> <p>Fan motor is quiet (loud motor may indicate problem).</p> | <p>Replace the fan immediately once the fan stops running. Fans typically run for 10-20 years, but it may be less.</p> <p>Replacement fan to have similar specifications as original with respect to flow and vacuum.</p> <p>After a fan is replaced, the system should be evaluated by a mitigation professional to verify effectiveness, which includes pressure readings.</p> <p>Original Fan Make and Model: AMG Eagle</p> | |

| | |
|---|--|
| <p>PHOTO</p>  | <p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Fan is operating as intended. No damage or excessive motor noise observed.</p> |
|---|--|

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|---|---|---------------------|---|--|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Suction Drop Point w/ Vent Pipe | <p>Suction Point : Soil gases are collected in a void space below the foundation, and tight seal prevents soil gas from getting inside the home.</p> <p>Vent Pipe: Pipe conveys the vacuum from the fan, and collects soil gases for discharge to the atmosphere.</p> | Suction Point Seal | Seal is air tight around pipe penetration. | <p>Suction point seal or vent pipe may need to be sealed or replaced if cracks or leaks appear.</p> <p>If any piping or sealing of the system is altered or replaced, the system should be evaluated by a mitigation professional to verify effectiveness, which includes pressure readings.</p> | |
| | | Vent Pipe Condition | Vent pipe is connected to fan, has not cracked. | | |
| PHOTO | | | <p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> | | |
|  | | | <p>Pickup Point No. 1. Vent piping appeared secure and connected to the fan. No damage to piping observed. Used smoke pen to test pickup point floor seal and found no leakage.</p> | | |

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|---|---|---------------------|--|---|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Suction Drop Point w/ Vent Pipe | Suction Point : Soil gases are collected in a void space below the foundation, and tight seal prevents soil gas from getting inside the home. Vent Pipe : Pipe conveys the vacuum from the fan, and collects soil gases for discharge to the atmosphere. | Suction Point Seal | Seal is air tight around pipe penetration. | Suction point seal or vent pipe may need to be sealed or replaced if cracks or leaks appear. If any piping or sealing of the system is altered or replaced, the system should be evaluated by a mitigation professional to verify effectiveness, which includes pressure readings. | |
| | | Vent Pipe Condition | Vent pipe is connected to fan, has not cracked. | | |
| PHOTO | | | NOTES: (Identify specific building and location description:) <input type="checkbox"/> Not Applicable | | |
|  | | | Pickup Point No. 2. Vent piping appeared secure and connected to the fan. No damage to piping observed. Used smoke pen to test pickup point floor seal and found no leakage. | | |

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| SYSTEM COMPONENT | | Date of Inspection: 10/09/2023 | | |
|--|---|---|---|---|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? |
| Sealed Sump w/Vent Pipe | <p>Sump Cover: Soil gases are collected in sump and the cover prevents soil gas from getting inside home.</p> <p>Vent Pipe: Pipe transports the soil gas from the sump for discharge to the atmosphere.</p> | <p>Suction Point Seal</p> <p>Vent Pipe Seal Condition</p> | <p>Seal is airtight to floor.</p> <p>Vent pipe is connected to the sump cover and is not cracked.</p> | <p>Sump cover or vent pipe may need to be sealed or replaced if cracks or leaks appear.</p> <p>If any piping or sealing of the system is altered or replaced, the system should be evaluated by a plumber or a mitigation professional to verify effectiveness, which includes pressure readings.</p> |
| <p>PHOTO</p>  | | | <p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Used smoke pen to test sump lid fittings and floor seal and found no leakage. No damage to piping or lid observed. Sump pump did not appear to cycle while present.</p> | |

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|-------------------|---|---|---|--|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Outdoor Vent Pipe | Pipe transports the soil gas from beneath the foundation for discharge to the atmosphere. | Vent Pipe Condition Vent Pipe Location | Vent pipe remains connected to fan. End of pipe free from obstructions. The exhaust is more than 15 feet from windows or air intakes. | Vent pipe may require replacement, or cleaning to remove ice or debris. If any piping or sealing of the system is altered or replaced, the system should be evaluated by a mitigation professional to verify effectiveness, which includes pressure readings. | |
| PHOTO | | | NOTES: (Identify specific building and location description:) <input type="checkbox"/> Not Applicable Vent pipe appears solid and connected to fan, no damage observed. Checked exhaust end for obstructions. No obstructions observed. The exhaust appears to be more than 15 feet from windows or air intakes. | | |



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| SYSTEM COMPONENT | | Date of Inspection: 10/09/2023 | | |
|---|---|--------------------------------|--|---|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? |
| Foundation Floor | Foundation is a barrier that minimizes soil gas entry into building, and helps fan to work efficiently. | Foundation Condition | No penetrating cracks or holes in foundation. | Seal cracks or other penetrations as you would to prevent water from entering. |
| | | Foundation Footprint | Check if there have been alterations or additions to building or footprint. | If building floor plan has changed, notify DNR and contact a mitigation professional to evaluate if modifications to the vapor mitigation system are necessary. |
| PHOTO | | | NOTES: (Identify specific building and location description:) <input type="checkbox"/> Not Applicable Some minor cracks observed in floor in south end of basement. The cracks are less than approximately 1/8-inch diameter and trend for several feet. These appear to be old and were likely present when the vapor mitigation system was installed. There do not appear to be any alterations to the building that would influence the vapor mitigation system. | |
|  | | | | |


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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|---|--|------------------|--|---|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Sub Slab Vapor Port | This is a sample port to measure vacuum or take sample of soil gas if needed. It needs to remain sealed when not in use to prevent soil gas entry into the home. | Port Seal/Cap | If able to measure the vacuum with a micromanometer, the pressure differential should be at least 0.004 inches of H ₂ O or at least one Pascal. | Repair or replace the seal and cover as needed. | |
| | | Port Condition | Port is sealed and capped when not in use. | Permanently seal hole if sample port is ever removed. | |
| PHOTO | | | <p>NOTES: (If taken, record the pressure differential reading. Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> | | |
|  | | | <p>Sub-slab Vacuum Observation Point 1. Measured vacuum using digital manometer at 0.161 inches water. No missing components or damage to point observed.</p> | | |

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|---|--|------------------|--|---|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Sub Slab Vapor Port | This is a sample port to measure vacuum or take sample of soil gas if needed. It needs to remain sealed when not in use to prevent soil gas entry into the home. | Port Seal/Cap | If able to measure the vacuum with a micromanometer, the pressure differential should be at least 0.004 inches of H ₂ O or at least one Pascal. | Repair or replace the seal and cover as needed. | |
| | | Port Condition | Port is sealed and capped when not in use. | Permanently seal hole if sample port is ever removed. | |
| PHOTO | | | <p>NOTES: (If taken, record the pressure differential reading. Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> | | |
|  | | | <p>Sub-slab Vacuum Observation Point 2. Measured vacuum using digital manometer at 0.167 inches water. No missing components or damage to point observed.</p> | | |

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| SYSTEM COMPONENT | | | | Date of Inspection: | 10/09/2023 |
|---|--|------------------|--|---|------------|
| NAME | WHAT DOES IT DO? | WHAT DO I CHECK? | WHAT SHOULD I SEE? | WHAT TO FIX? | |
| Sub Slab Vapor Port | This is a sample port to measure vacuum or take sample of soil gas if needed. It needs to remain sealed when not in use to prevent soil gas entry into the home. | Port Seal/Cap | If able to measure the vacuum with a micromanometer, the pressure differential should be at least 0.004 inches of H ₂ O or at least one Pascal. | Repair or replace the seal and cover as needed. | |
| | | Port Condition | Port is sealed and capped when not in use. | Permanently seal hole if sample port is ever removed. | |
| PHOTO | | | <p>NOTES: (If taken, record the pressure differential reading. Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> | | |
|  | | | <p>Sub-slab Vacuum Observation Point 3. Measured vacuum using digital manometer at 0.183 inches water. No missing components or damage to point observed.</p> | | |