

August 24, 2023
File No. 25222269.02

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
Sandie's Dry Cleaner & Laundry (Former) – BRRTS #02-45-55222
Off Site Residential Property – 135 W. Lincoln Ave

Dear Ms. Borski:

SCS Engineers (SCS) has prepared this report to summarize the visual inspection performed for the vapor mitigation system (VMS) installed at the residence located at 135 W. Lincoln Ave. in Little Chute, Wisconsin (**Figure 1**). The VMS is maintained to prevent migration of chlorinated volatile organic compound (CVOC) vapors into the building. The VMS inspection work and preparation of this report were performed under the Vapor Intrusion Zone Contract (VIZC) at the request of the Wisconsin Department of Natural Resources (WDNR).

During previous investigation activities related to the former Sandie's Dry Cleaner and Laundry (Sandie's) site, vapor intrusion risk to the single-family residential building located at 135 W. Lincoln Avenue was identified by the United States Environmental Protection Agency (EPA). The vapor intrusion risk was mitigated by EPA's contractor in 2012 by installation of a single pickup point (Original Pickup Point) and a radon-type fan. The vapor system was enhanced in 2013 by SCS and Acura Services, LLC (Acura) at the request of WDNR under VIZC. Two additional pick-up points (Pickup Points A and B) were installed, and the fan was upgraded to account for the additional pick-up points. Details of the system upgrade and system performance evaluation are presented in the October 14, 2013 Post Mitigation Report prepared by Acura.

A VMS inspection was performed by SCS on May 23, 2023. Inspection documentation, including WDNR inspection form 4400-321, and SCS photos are included in **Attachment A**. Additional details are provided below.

VAPOR MITIGATION SYSTEM INSPECTION

SCS visually inspected and photographed the VMS, including the VMS fan, piping, manometer, pickup point seals, exhaust, and building floor. Upon arrival, the manometer on the original pickup point piping indicated no vacuum. The fan did not appear to be running, and the circuit breaker labeled "Radon Fan" was observed to be flipped in the electrical box. After the breaker was flipped three times, the fan restarted and a vacuum of approximately 2.5 inches of water was observed at the manometer. With the exception of the electrical issue with the fan, the other visible VMS components appeared to be in working order with no damage or obstructions noted. The floor appeared to be in good condition with no significant cracks or damage noted. SCS is not aware of



any changes to the floor slab or penetrations made after construction of the VMS. SCS used a smoke pen to check for leaks around the pickup point floor penetrations. No leaks were detected.

SCS did not view the sealed sump during the inspection. The sump is not connected to the VMS system, and will be inspected during recommended system repairs.

SCS observed an open floor drain near Pickup Point B during the inspection. The floor drain appears to be connected to the sanitary sewer lateral, which appears to have been replaced relatively recently based on the patched concrete floor. The drain is currently receiving water from the dehumidifier and the furnace/air conditioning unit condensate.

SCS did not observe the vacuum monitoring points installed by Acura in 2013, and therefore they are assumed to have been abandoned by Acura.

Other than contact information for the former mitigation contractor, SCS did not observe system labeling, or a copy of the mitigation system operation, maintenance, and monitoring (OMM) plan attached to the system.

SCS personnel discussed the findings of the inspection with the homeowner and their family, who assists with household maintenance. SCS explained that the manometer should be checked periodically to make sure the fan is operating. We also showed them the electrical breaker labeled "Radon Fan" and explained that the breaker should be checked in the event of a fan shutdown. We did not learn if the owner or family representative had a copy of the OMM plan.

RECOMMENDATIONS

Based on our May 23, 2023 inspection, SCS recommends the following:

- The existing fan should be replaced since it has shown signs of failure. The fan was installed in October 2013 and is likely near the end of its functional life. SCS recommends using the same fan model, or one with similar performance specifications.
- An alarm should be installed to warn about potential future shutdowns of the fan. After installation of a new fan, SCS recommends collection of sub-slab vacuum readings across the basement to confirm adequate depressurization of the sub-slab.
- Label pickup points and add contact information for SCS Engineers in the event of a system shutdown.
- The sump should be inspected visually and checked for potential leaks during the recommended repair activities.

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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,



Jacob Krause, P.G.
Project Hydrogeologist
SCS Engineers



Robert Langdon
Senior Project Manager
SCS Engineers

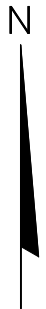
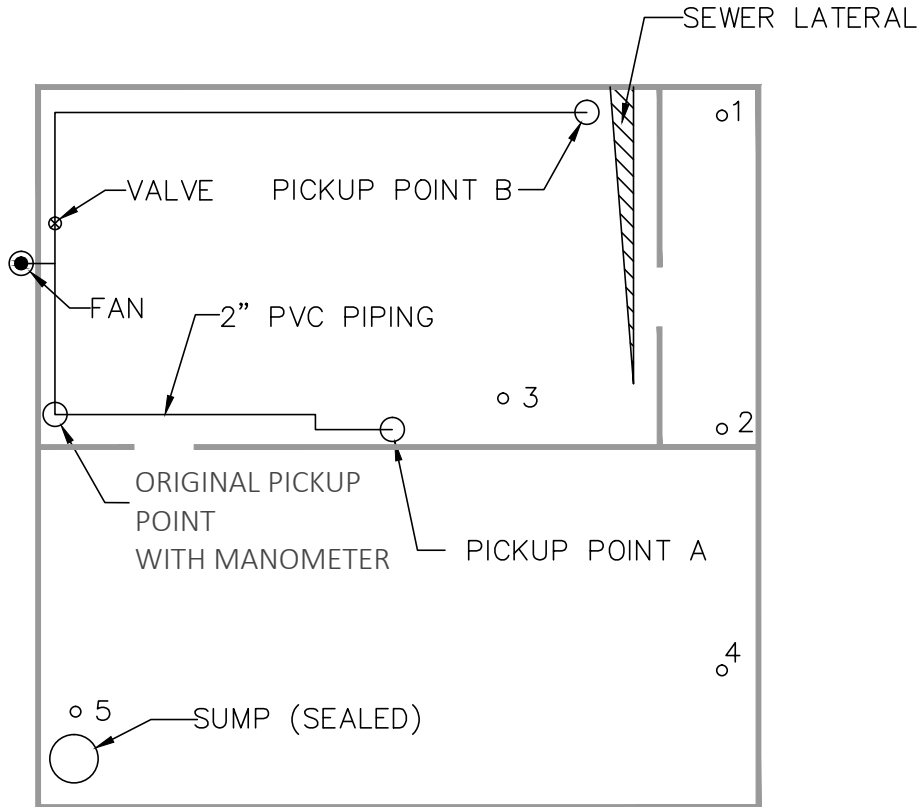
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Attachments: Figure 1 – Sub-Slab Depressurization System
Attachment A – VMS Inspection Log, Form 4400-321

I:\25222269.00\25222269.02 Sandie's Dry Cleaner and Laundry\Deliverables\VMS Inspection Summary\230824_Borski_VMS Inspection Summary Sandie's 135 W. Lincoln Residence_Final.docx

Figure 1
Sub-Slab Depressurization System

BASEMENT LEVEL

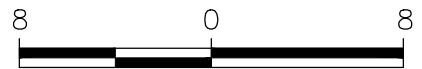


LEGEND


- 1 ACURA VACUUM MONITORING POINT, ASSUMED ABANDONED/ SEALED IN 2013 FOLLOWING SYSTEM UPGRADES.

NOTES:

1. INFORMATION OBTAINED FROM NOTES PROVIDED BY ACURA SERVICES, LLC AND RADON ENERGY AND VENTILATION SERVICES.
2. SCALE AND SUB-SLAB DEPRESSURIZATION SYSTEM LOCATIONS ARE APPROXIMATE.



SCALE: 1" = 8'

CLIENT	 WISCONSIN DEPARTMENT OF NATURAL RESOURCES		SITE	135 W. LINCOLN STREET LITTLE CHUTE, WISCONSIN		ENGINEER	SUB-SLAB DEPRESSURIZATION SYSTEM	
	PROJECT NO.	25213180.02		DRAWN BY:	KRG		SCS ENGINEERS	2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830
DRAWN:	11/07/13	CHECKED BY:	RL	FIGURE				
REVISED:		APPROVED BY:	RL 12/13/13		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: Sandie's Dry Cleaner & Laundry (Former) BRRTS No.: 02-45-552222
 Address Being Inspected (e.g., 123 N. Main St.): 135 W. Lincoln Ave Date of Inspection: 05/23/2023
 Inspection Performed By (Name & Title/Company): Jacob Krause, Project Professional, 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:	05/23/2023
NAME	WHAT DOES IT DO?	WHAT DO I CHECK?	WHAT SHOULD I SEE?	WHAT TO FIX?	
Manometer or Differential Pressure Gauge	Measures differential pressure between vacuum side of vent pipe and indoor space. This measurement confirms there is a vacuum being pulled by the fan.	Liquid Level on Manometer or Gauge	Liquid level in manometer should be offset (not level with each other).	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. Hire a professional to identify cause and repair if needed.	
PHOTO			NOTES: (Record the reading on the gauge. Identify specific building and location description:)		
			<input type="checkbox"/> Not Applicable Manometer on Original Pickup Point as found upon arrival. No vacuum was observed. The fan did not appear to be running and the circuit breaker labeled "Radon Fan" was tripped in the electrical box.		

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Address Being Inspected: 135 W. Lincoln Ave


Vapor Mitigation System Inspection Log

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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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>Manometer on Original Pickup Point after breaker was flipped three times. The fan re-started, and vacuum of approximately 2.5 inches of water was observed at the manometer.</p>		

SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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 Prowler</p>	

<p>PHOTO</p> 	<p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Fan was not running upon arrival, but re-started after flipping the "Radon Fan" circuit breaker three times. The fan motor was quiet and not noticeably loud once running. The fan was installed in October 2013, and is potentially failing, as evidenced by the fan not running upon arrival.</p>
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SYSTEM COMPONENT		Date of Inspection: 05/23/2023		
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>	<p>Suction Point Seal</p> <p>Vent Pipe Condition</p>	<p>Seal is air tight around pipe penetration.</p> <p>Vent pipe is connected to fan, has not cracked.</p>	<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>
PHOTO		<p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Pickup Point B. Vent piping is secure, no damage to piping observed. Used smoke pen to test pickup point floor seal one fan was re-started and found no leakage.</p>		
				

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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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 A. Vent piping is secure, no damage to piping observed. Used smoke pen to test pickup point floor seal once fan was re-started and found no leakage.</p>		

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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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.	Suction point seal or vent pipe may need to be sealed or replaced if cracks or leaks appear.	
		Vent Pipe Condition	Vent pipe is connected to fan, has not cracked.	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			<p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>Original Pickup Point installed prior to Pickup Points A and B. Piping is secure and in good condition. Used smoke pen to check for leaks once fan was restarted, and none were observed.</p>		
					

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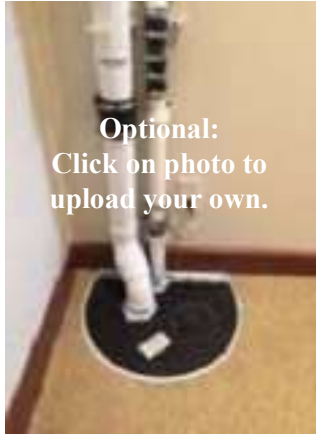
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SYSTEM COMPONENT		Date of Inspection: 05/23/2023		
NAME	WHAT DOES IT DO?	WHAT DO I CHECK?	WHAT SHOULD I SEE?	WHAT TO FIX?
Sealed Sump w/Vent Pipe	<p>Sump Cover: Soil gases are collected in sump and the cover prevents soil gas from getting inside home.</p> <p>Vent Pipe: Pipe transports the soil gas from the sump for discharge to the atmosphere.</p>	Suction Point Seal	Seal is airtight to floor.	<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>
		Vent Pipe Seal Condition	Vent pipe is connected to the sump cover and is not cracked.	
PHOTO			<p>NOTES: (Identify specific building and location description:)</p> <p><input type="checkbox"/> Not Applicable</p> <p>The sump was not viewable at the time of inspection but will be inspected and documented at the time of fan replacement and active alarm installation.</p>	
 <p>Optional: Click on photo to upload your own.</p>				

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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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.		

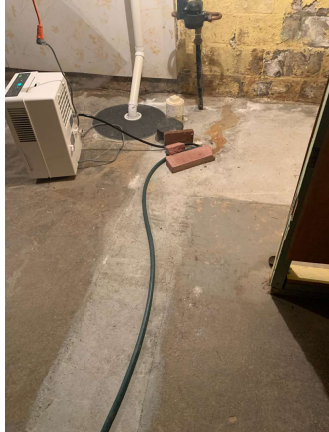
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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
NAME	WHAT DOES IT DO?	WHAT DO I CHECK?	WHAT SHOULD I SEE?	WHAT TO FIX?	
Foundation Floor	Foundation is a barrier that minimizes soil gas entry into building, and helps fan to work efficiently.	Foundation 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		
			<p>The foundation floor is in generally good condition. The area shown in the photograph includes the patched section where the sanitary sewer lateral connection enters the building.</p>		

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SYSTEM COMPONENT				Date of Inspection:	05/23/2023
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 checked="" type="checkbox"/> Not Applicable</p>		
 <p>Optional: Click on photo to upload your own.</p>					