

Operations and Maintenance Plan

The Laundry Basket
300 South Main Street
Luck, WI 54853

MSA Project No. 06080801



May 2017

Operations and Maintenance Plan

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300 South Main Street
Luck, WI 54853

MSA Project No. 6080801

Prepared for:
Lois Baldwin
517 4th Street
Luck, WI 54853

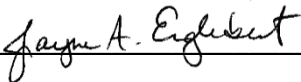
Prepared by:
MSA Professional Services, Inc.
332 West Superior Street, Suite 600
Duluth, MN 55802

CERTIFICATION

**The Laundry Basket
Lois Baldwin, Responsible Party
MSA Project No. 06080801**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the State of Wisconsin.

Print Name: Jayne Englebert, P.G. _____

Signature:  _____

Date: 05/08/2017 **License #:** 54-13

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1.0 Introduction

MSA Professional Services, Inc. (MSA) has prepared this Operations and Maintenance (O&M) Plan for the Laundry Basket site, located at 300 South Main Street in Luck, Wisconsin (PIN 146-00206-0000) for the responsible party, Ms. Lois Baldwin. The purpose of this document is to ensure the proper operation and maintenance of the active sub-slab depressurization (SSD) system installed at the Laundry Basket site. The site was formerly occupied by a dry cleaning operation, and a site investigation completed in January 2010 revealed that petroleum and chlorinated solvent contamination remains at the site.

Indoor air samples collected at the site in 2008 showed tetrachloroethylene concentrations in excess of EPA Indoor Air action levels. Two sub-slab and four shallow soil vapor samples were collected during the investigation. The following six compounds exceeding the EPA's Target Shallow Soil Vapor Concentrations were detected in one or more of the vapor probes: benzene, ethylbenzene, methylene chloride, tetrachloroethylene, trichloroethylene, and 1,2,4-trimethylbenzene.

This SSD system was installed on September 9, 2011 to help prevent remnant volatile organic vapors in the soil from seeping through the basement slab and accumulating in the building. This is accomplished by collecting air impacted by chemicals of concern from below the building slab and piping it outside of the building through a series of pipes and a fan.

1.1 Location

The property (Parcel Identification Number 149-00196-0000) is located at 300 South Main Street in the Village of Luck, Polk County, Wisconsin as visually depicted on **Attachment D.2.a**. According to the Polk County website, the property is approximately 0.15 acres and is currently occupied by a laundromat facility.

The site location and layout are illustrated on **Attachments D.2.a** and **D.2.b**, respectively.

1.2 System Description

The system consists of three vapor collection points comprising two separate SSD systems. One system includes a pit installed behind the west bank of dryers in the store room and a second pit with a perforated pipe installed to a depth of six feet beneath the former location of the dry-cleaning machine. These two pits are piped together and depressurized by a single fan mounted on the outside of the south wall of the building. The exhaust for this system extends approximately 12" above the roof of this portion of the building.

The second system is located near the bottom of the basement steps under the former Scoops Ice Cream shop (currently laundromat space). The vent pipe is routed through the storage shelves in the stairway to the basement and to the attic. This system is depressurized by a fan

mounted in the attic that discharges through the roof.

The five main components of the SSD systems at the site include:

- Air/vapor collection piping installed beneath the building slab and covered in granular fill,
- Floor sealant and concrete repair to seal the area between the granular fill material and the building slab to prevent the movement of vapors into the building,
- Air/vapor collection piping installed above the building slab to convey vapors collected from beneath the slab to the outside of the building,
- A fan to facilitate air conveyance, and
- Pressure sensors (manometers) to monitor proper system operation.

Attachment D.2.b depicts the locations of the sub-slab depressurization points and system components within the building.

2.0 System Design and Construction

Design of the SSD system was based on sub-slab communication tests performed by the installation contractor, Croix Valley Radon Mitigation, of Luck, Wisconsin. The system was installed on September 9, 2011.

Three suction points were installed; one suction point was installed near the former dry cleaning machine, one was installed near the water heater in the southeast corner of the Laundry Basket building, and one was installed in the basement of the building. Two Radonaway GP501 fans were installed, one for the two suction points in the laundry area, and one for the point in the basement of the building.

After penetrating the concrete slab, MSA used a hand auger to install a 6-foot-deep boring through the slab into the source area by the former dry cleaning machine. A 0.03" slot screen was installed inside the 4-inch vent pipe in an effort to improve air flow to contaminated soil in that area. The concrete floor penetration near the former dry cleaning machine was sealed with clear coat sealer. Basement cracks, drains, and other openings were sealed to maintain negative pressure under the basement slab.

The fan associated with the two suction points in the laundromat building was installed on the outside of the south wall of the building, with the exhaust discharging 12" above the roof elevation at that point. Due to this fan being located outside, a condensation bypass system was installed in this system on the intake side of the fan. Because the fan associated with the basement SSD point is located inside the building in the attic, a condensation bypass system was not required.

See **Appendix A** for system installation information and **Attachment D.2.c** for depressurization point locations. Photographs of the system components are located in **Attachment D.3**.

3.0 System Maintenance

The SSD system is designed to run continuously in order to maintain negative pressure beneath the basement slab. There is no regular maintenance required, but a visual inspection should be conducted on at least a quarterly basis by the building owner. If a fan does not appear to be operating properly Croix Valley Radon Mitigation (Val Reidman) should be contacted, and if maintenance is deemed necessary the fan must be sent to RadonAway to be serviced.

RadonAway
3 Saber Way
Ward Hill, MA 01835

4.0 Inspections

The system gauges should be checked at least monthly, and the SSD system should be inspected at least quarterly by the building owner to make sure the fans are operating properly. Inspections should be completed to ensure continuous and reliable operation, and should include the visual inspection of the following:

- **SSD Components** – Inspect all parts of the SSD system, including pipes, fans, electrical connections, etc. Any cracks or other operational issues (excess noise, rattling, moisture, etc.) should be reported in the inspection log and addressed immediately. During proper operation, the fan should be audible but not excessively loud, and the pipes should not vibrate.
- **Cracks and Gaps** – Inspect flooring and walls in the basement for unsealed cracks and gaps. If new cracks or gaps begin to appear, they should be noted in the inspection log and sealed immediately.
- **Labels** – Ensure that SSD system labels are correct and that information is up to date. Contact information for notifying maintenance staff should be updated when necessary.
- **Gauges** – Two manometers (pressure gauges) indicate the operational status of the SSD system. Inspect each manometer associated with either SSD system. The basement and closet manometers should read approximately 3.5. If the vacuum pressure reading on the manometer is significantly higher or lower than the value specified on the meter or if the meter reads zero, refer to the procedure listed below:
 - **Make sure the circuit to the fan is on.** If this is the case, the fan should be able to be heard running from nearby.
 - **If the fan is functioning but the manometer still reads zero, it is possible there is a blockage on the exhaust side of the fan.** During winter it is possible that a buildup of ice or snow could plug the vent pipe and cause the system to stop working. This is usually a temporary event and will clear once the ice melts. If this problem occurs during warmer temperatures, check the vent pipe for other types of blockage.
 - **The manometer can read higher than the initial pressure during the spring and after very wet periods.** When the water table rises to a point near the intake

pipe under the basement slab, the fan may not be able to suction air properly from the soil. This is generally a temporary problem that subsides when the water level recedes.

- **If the manometer reads lower than the initial pressure, this indicates that the fan is moving more air than before.** This could be caused by a leak in the vent pipe below the fan, or in the seal where the pipe enters the basement floor. Lower pressure could also indicate that a crack or opening is present near the suction point in the floor. Small fluctuations will occur due to the moisture content of the soil.
- Any immediate questions or concerns regarding the SSD system can be directed to Val Reidman of Croix Valley Radon Mitigation (See **Section 6.0**)

If any items are found to have been damaged or changed, it should be noted in the field notes for that day and findings discussed promptly with the project manager. Any problems occurring for two or more successive inspections must be reported to the DNR manager for this project (See **Section 5.0**). If any repairs are made on site, they should be indicated in the inspection log, which will be kept on site in the Laundry Basket building. A copy of the inspection log can be found in **Attachment D.4**. An additional inspection checklist is provided in **Attachment D.4.b**.

5.0 Notifications

If there are to be any changes in land or property use or if system changes are necessary, it is required that the DNR be notified at least 45 days prior to making the change. To notify the DNR of impending changes, contact the DNR manager for this project:

Philip Richard
875 South 4th Avenue
Park Falls, WI 54552
Email: philip.richard@wisconsin.gov

6.0 Contacts

- **Responsible Party:**
Lois Baldwin
517 South 4th Street
Luck, WI 54853
- **Consultant:**
MSA Professional Services
1835 North Stevens Street
Rhineland, WI 54501
Contact: Brian Hegge
Cell: (715) 362-3244
Email: bhegge@msa-ps.com

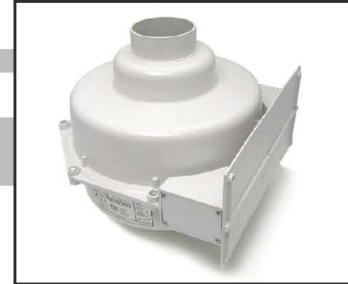
OR

332 West Superior Street
Duluth, MN 55802
Contact: Erica Klingfus
Cell: (608) 445-4962
Email: eklingfus@msa-ps.com

- **DNR Project Manager:**
Philip Richard
875 South 4th Avenue
Park Falls, WI 54552
Email: philip.richard@wisconsin.gov
- **SSD System Installer:**
Croix Valley Radon Mitigation LLC
2551 190th Street
Luck, WI 54853
Contact: Val Reidman
Cell: (715) 554-0460
Email: val@radonrx.com



The World's Leading
Radon Fan Manufacturer



GP/XP/XR Series Installation Instructions

Please Read And Save These Instructions

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

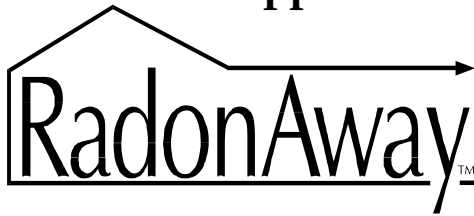
1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustibles or flammable materials.
2. **WARNING!** Do not use fan to pump explosive or corrosive gases.
3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.
5. **NOTICE!** There are no user serviceable parts located inside the fan unit.
Do NOT attempt to open. Return unit to the factory for service.
6. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA) "National Electrical Code, Standard #70" - current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician.
7. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.
8. **WARNING - TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**
 - a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
 - b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel

RadonAway

3 Saber Way | Ward Hill, MA 01835

www.radonaway.com

Appendix A: Radonaway System Specifications



INSTALLATION INSTRUCTION IN014 Rev I

XP/XR Series

XP101 p/n 23008-1
XP151 p/n 23010-1
XP201 p/n 23011-1
XR261 p/n 23019-1

GP Series

GP201 p/n 23007-1
GP301 p/n 23006-1
GP401 p/n 23009-1
GP501 p/n 23005-1

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The GP/XP/XR Series Radon Fans are intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of a fan. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The GP/XP/XR Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F.

1.3 ACOUSTICS

The GP/XP/XR Series Fan, when installed properly, operates with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

1.4 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes thus blocking air flow to the GP/XP/XR Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes allowing for return to normal operation.

1.5 SLAB COVERAGE

The GP/XP/XR Series Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the GP/XP/XR Series Fan best suited for the sub-slab material can improve the slab coverage. The GP & XP Series have a wide range of models to choose from to cover a wide range of subslab material. The higher static suction fans are generally used for tighter subslab materials. The XR Series is specifically designed for high flow applications such as stone/gravel and drain tile. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

Appendix A: Radonaway System Specifications

1.6 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The GP/XP/XR Series Fan **MUST** be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The GP/XP/XR Series Fans are **NOT** suitable for underground burial.

For GP/XP/XR Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Dia.	Minimum Rise per Foot of Run*		
	@25 CFM	@50 CFM	@100 CFM
4"	1/8"	1/4"	3/8"
3"	1/4"	3/8"	1 1/2"

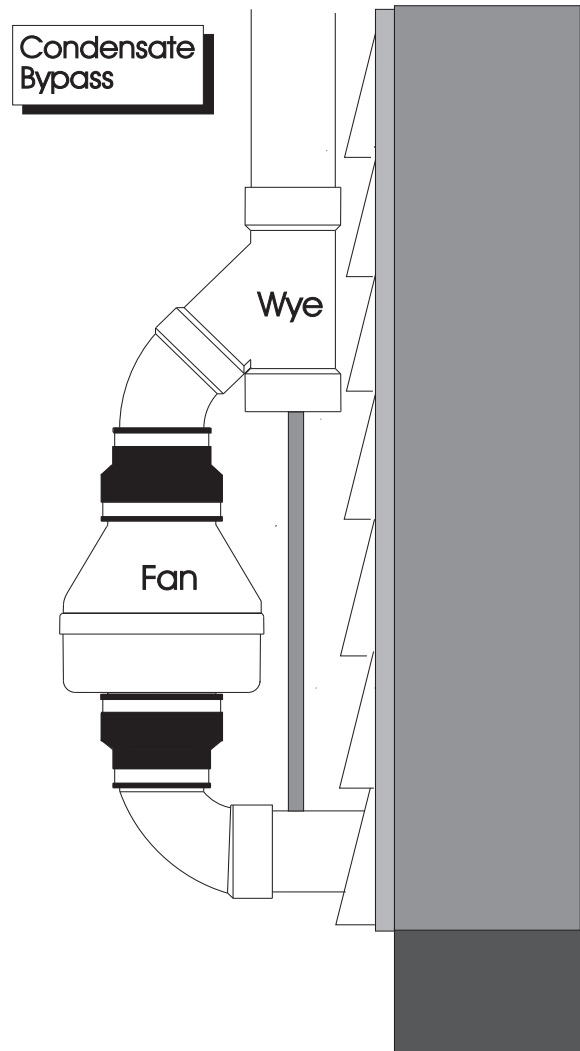
*Typical GP/XP/XR Series Fan operational flow rate is 25 - 90 CFM.
(For more precision, determine flow rate by using the chart in the addendum.)

Under some circumstances in an outdoor installation a condensate bypass should be installed in the outlet ducting as shown. This may be particularly true in cold climate installations which require long lengths of outlet ducting or where the outlet ducting is likely to produce large amounts of condensation because of high soil moisture or outlet duct material. Schedule 20 piping and other thin-walled plastic ducting and Aluminum downspout will normally produce much more condensation than Schedule 40 piping.

The bypass is constructed with a 45 degree Wye fitting at the bottom of the outlet stack. The bottom of the Wye is capped and fitted with a tube that connects to the inlet piping or other drain. The condensation produced in the outlet stack is collected in the Wye fitting and drained through the bypass tube. The bypass tubing may be insulated to prevent freezing.

1.7 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A manometer, such as a U-Tube, or a vacuum alarm is recommended for this purpose.



Appendix A: Radonaway System Specifications

1.8 ELECTRICAL WIRING

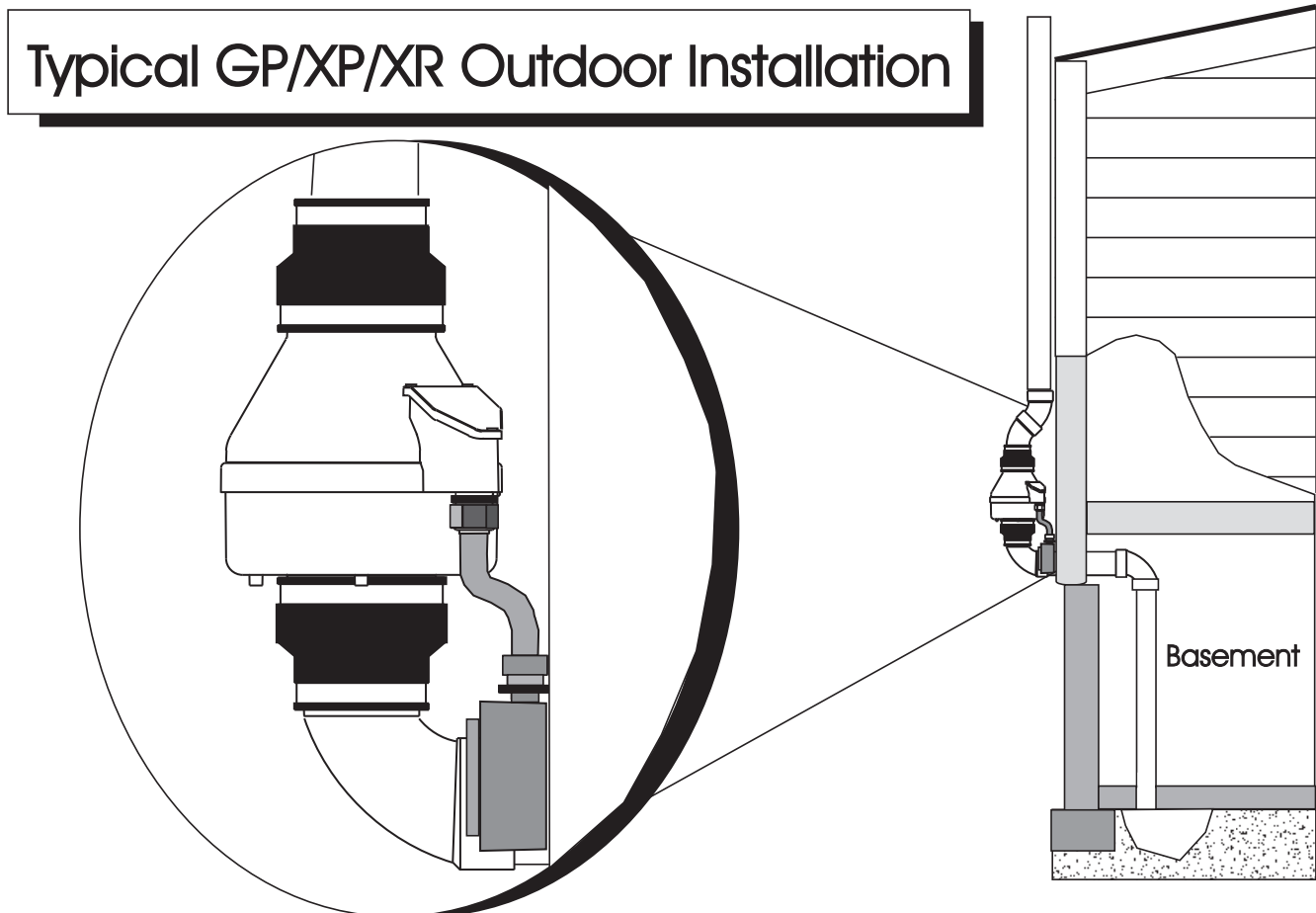
The GP/XP/XR Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)'National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a U.L. listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.

1.9 SPEED CONTROLS

The GP/XP/XR Series Fans are rated for use with electronic speed controls, however, they are generally not recommended. If used, the speed control recommended is Pass & Seymour Solid State Speed Control Cat. No. 94601-I.

2.0 INSTALLATION

The GP/XP/XR Series Fan can be mounted indoors or outdoors. (It is suggested that EPA recommendations be followed in choosing the fan location.) The GP/XP/XR Series Fan may be mounted directly on the system piping or fastened to a supporting structure by means of optional mounting bracket.



Appendix A: Radonaway System Specifications

2.1 MOUNTING

Mount the GP/XP/XR Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

2.2 MOUNTING BRACKET (optional)

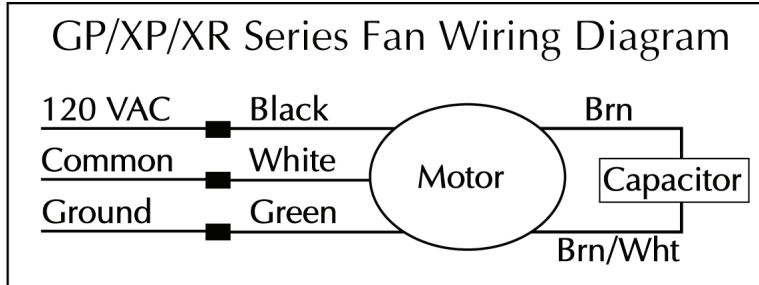
The GP/XP/XR Series Fan may be optionally secured with the integral mounting bracket on the GP Series fan or with RadonAway P/N 25007-2 mounting bracket for an XP/XR Series Fan. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as means of disconnect for servicing the unit and vibration isolation.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections (See Section 1.8):

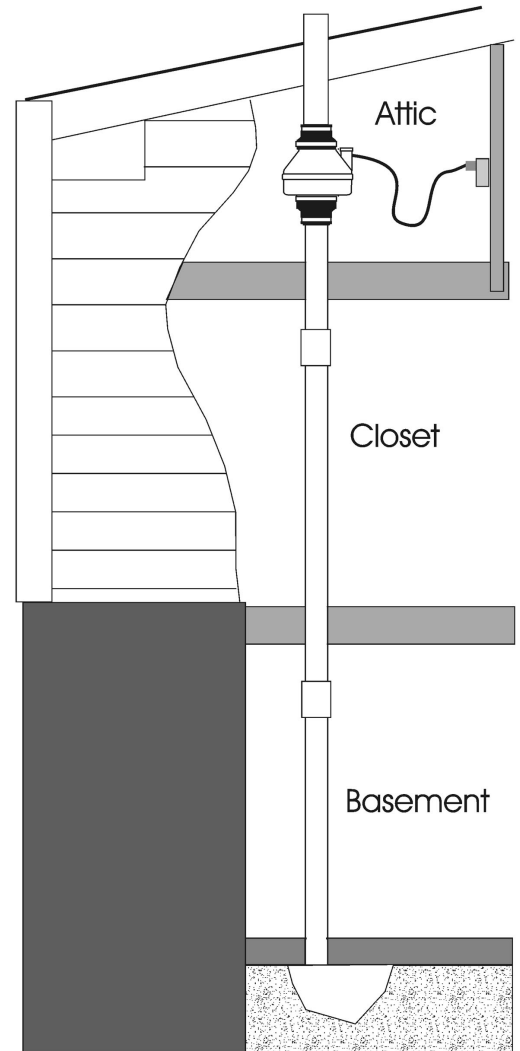


2.5 VENT MUFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS

- ___ **Verify** all connections are tight and **leak-free**.
- ___ **Insure** the GP/XP/XR Series Fan and all ducting is secure and vibration-free.
- ___ **Verify** system vacuum pressure with manometer. **Insure** vacuum pressure is **less than** maximum recommended operating pressure
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)
See Product Specifications. If this is exceeded, increase the number of suction points.
- ___ **Verify Radon levels by testing to EPA protocol.**



Appendix A: Radonaway System Specifications

XP/XR SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the XP & XR Series Fan:

	Typical CFM Vs Static Suction "WC								
	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
XP101	125	118	90	56	5	-	-	-	-
XP151	180	162	140	117	78	46	10	-	-
XP201	150	130	110	93	74	57	38	20	-
XR261	250	215	185	150	115	80	50	20	-

Maximum Recommended Operating Pressure*	
XP101	0.9" W.C. (Sea Level Operation)**
XP151	1.3" W.C. (Sea Level Operation)**
XP201	1.7" W.C. (Sea Level Operation)**
XR261	1.6" W.C. (Sea Level Operation)**

*Reduce by 10% for High Temperature Operation

**Reduce by 4% per 1000 feet of altitude

Power Consumption @ 120 VAC	
XP101	40 - 49 watts
XP151	45 - 60 watts
XP201	45 - 66 watts
XR261	65 - 105 watts

XP Series Inlet/Outlet: 4.5" OD (4.0" PVC Sched 40 size compatible)

XR Series Inlet/Outlet: 5.875" OD

Mounting: Mount on the duct pipe or with optional mounting bracket.

Recommended ducting: 3" or 4" Schedule 20/40 PVC Pipe

Storage temperature range: 32 - 100 degrees F.

Normal operating temperature range: -20 - 120 degrees F.

Maximum inlet air temperature: 80 degrees F.

Size: 9.5H" x 8.5" Dia.

Weight: 6 lbs. (XR261 - 7 lbs)

Continuous Duty

Thermally Protected

Class B Insulation

3000 RPM

Rated for Indoor or Outdoor Use



Appendix A: Radonaway System Specifications

GP SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the GP Series Fan:

	Typical CFM Vs Static Suction "WC						
	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP501	95	87	80	70	57	30	5
GP401	93	82	60	38	12	-	-
GP301	92	77	45	10	-	-	-
GP201	82	58	5	-	-	-	-

Maximum Recommended Operating Pressure*		
GP501	3.8" W.C.	(Sea Level Operation)**
GP401	3.0" W.C.	(Sea Level Operation)**
GP301	2.4" W.C.	(Sea Level Operation)**
GP201	1.8" W.C.	(Sea Level Operation)**

*Reduce by 10% for High Temperature Operation

**Reduce by 4% per 1000 feet of altitude

Power Consumption @ 120 VAC	
GP501	70 - 140 watts
GP401	60 - 110 watts
GP301	55 - 90 watts
GP201	40 - 60 watts

Inlet/Outlet: 3.5" OD (3.0" PVC Sched 40 size compatible)

Mounting: Fan may be mounted on the duct pipe or with integral flanges.

Weight: 12 lbs.

Size: 13H" x 12.5" x 12.5"

Recommended ducting: 3" or 4" Schedule 20/40 PVC Pipe

Storage temperature range: 32 - 100 degrees F.

Normal operating temperature range: -20 - 120 degrees F.

Maximum inlet air temperature: 80 degrees F.

Continuous Duty

Class B Insulation

3000 RPM

Thermally Protected

Rated for Indoor or Outdoor Use



Appendix A: Radonaway System Specifications

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the GPx01/XP/XR Series Fan for shipping damage within 15 days of receipt. Notify RadonAway of any damages immediately. Radonaway is not responsible for damages incurred during shipping. However, for your benefit, Radonaway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open.** Return unit to factory for service.

Install the GPx01/XP/XR Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the GPx01/XP/XR Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 90 days from the date of purchase (the "Warranty Term").

RadonAway will replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at Owner's cost) to the RadonAway factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway.

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway will extend the Warranty Term of the fan to 5 years from date of manufacture if the Fan is installed in a professionally designed and professionally installed radon system or installed as a replacement fan in a professionally designed and professionally installed radon system. Proof of purchase and/or proof of professional installation may be required for service under this warranty. Outside the Continental United States and Canada the extended Warranty Term is limited to one (1) year from the date of manufacture.

RadonAway is not responsible for installation, removal or delivery costs associated with this Warranty.

EXCEPT AS STATED ABOVE, THE GPx01/XP/XR SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

RadonAway
3 Saber Way
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

Record the following information for your records:

Serial No. _____
Purchase Date _____

Appendix B: Manometer Specifications



Dynameter™ Vacuum Gauge P/N 50006-1

INSTALLATION INSTRUCTIONS:

1. Select location on the vertical suction pipe where the vacuum gauge is to be mounted. Pipe surface should be clean and dry.
2. Remove end caps from both tube ends. Hold gauge upright to prevent loss of gauge fluid.

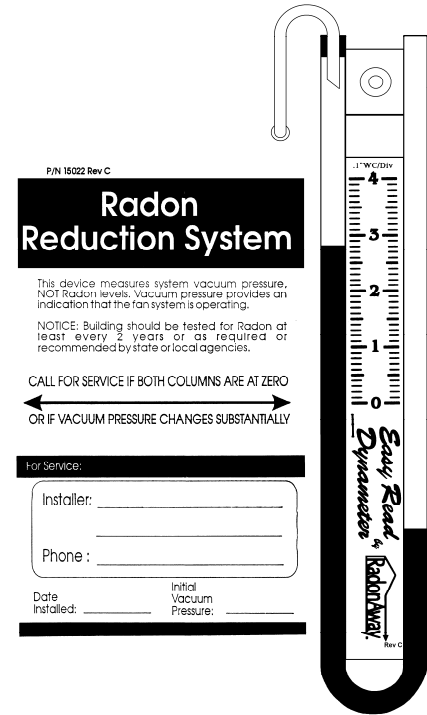
Warning: Do not ingest gauge fluid.

Caution: Gauge fluid will stain if spilt.

3. Remove protective backing from the foam tape on the back of the unit and firmly press into place on piping.
4. Allow fluid to settle in gauge for several minutes and then zero the gauge by sliding the tube until the tops of both columns align with the zero mark on the pressure scale. The gauge may be fixed in this position using the mounting screw provided.
5. Drill a 3/16" hole in piping 2 inches below the top of the gauge.

Positioning the hole below the top of the gauge will prevent condensation from potentially collecting in the u-tube gauge.

6. Insert vinyl tubing into either opening in gauge tube and push firmly.
7. Install end of the tubing into drilled hole. Apply caulking for airtight connection.
8. Fill out label using an indelible marker.
9. Remove backing and position label next to vacuum gauge ensuring the arrow is lined up with the gauge zero.



WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the Dynameter Vacuum Gauge (the "Gauge") will be free from defects in materials and workmanship for a period of five (5) years from the date of manufacture (the "Warranty Term"). Outside the Continental United States and Canada the Warranty Term is one (1) year from the date of manufacture.

RadonAway will replace any Gauge which fails due to defects in materials or workmanship. The Gauge must be returned (at owner's cost) to the RadonAway factory. Proof of purchase must be supplied upon request for service under this Warranty.

This Warranty is contingent on installation of the Gauge in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway.

RadonAway is not responsible for installation, removal or delivery costs associated with this Warranty.

EXCEPT AS STATED ABOVE, THE GAUGE IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE GAUGE OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

RadonAway
3 Saber Way
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

Record the following information for your records:

Purchase Date _____

Rev. 08/05 A

Appendix C: Croix Valley Radon Mitigation Specifications



**Croix Valley
Radon Mitigation LLC**

Vapor Mitigation System

Val Riedman
Residential Mitigation Provider
#103414RMT

2551 190th St
Luck, WI 54853

Phone: 1-888-481-6870
715-554-0460 Cell
715-472-6870 Fax
www.radonrx.com
val@radonrx.com

Principles of Operation and Maintenance of your System

Your system is designed to run continually in order to maintain a negative pressure beneath the basement floor. There is no regular maintenance required except to regularly check to see if the fan is operating. To do so simply view the manometer installed on the pipe to insure that it isn't reading zero. If it does read zero please follow the procedure listed below.

1. Make sure that the circuit to the fan is on. If this is the case the fan should be able to be heard running from near by.
2. If the fan is functioning but the manometer still reads zero, then there must be a blockage on the exhaust side of the fan.
3. During winter it is possibly that a build up of ice could plug the vent pipe and cause the system to stop working. This is usually a temporary event and it will clear by itself. If this problem occurs during warmer temperatures, check the outlet end of the vent for some other type of blockage.

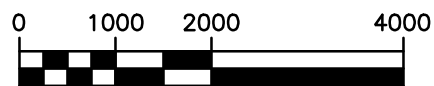
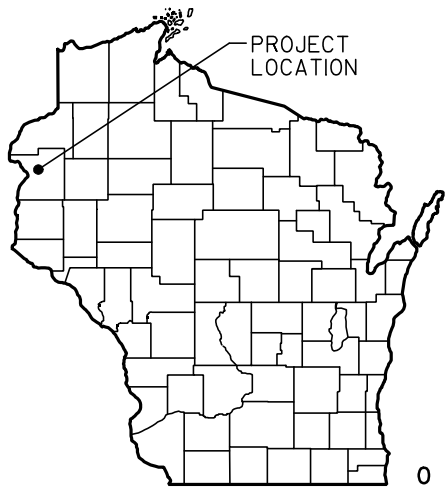
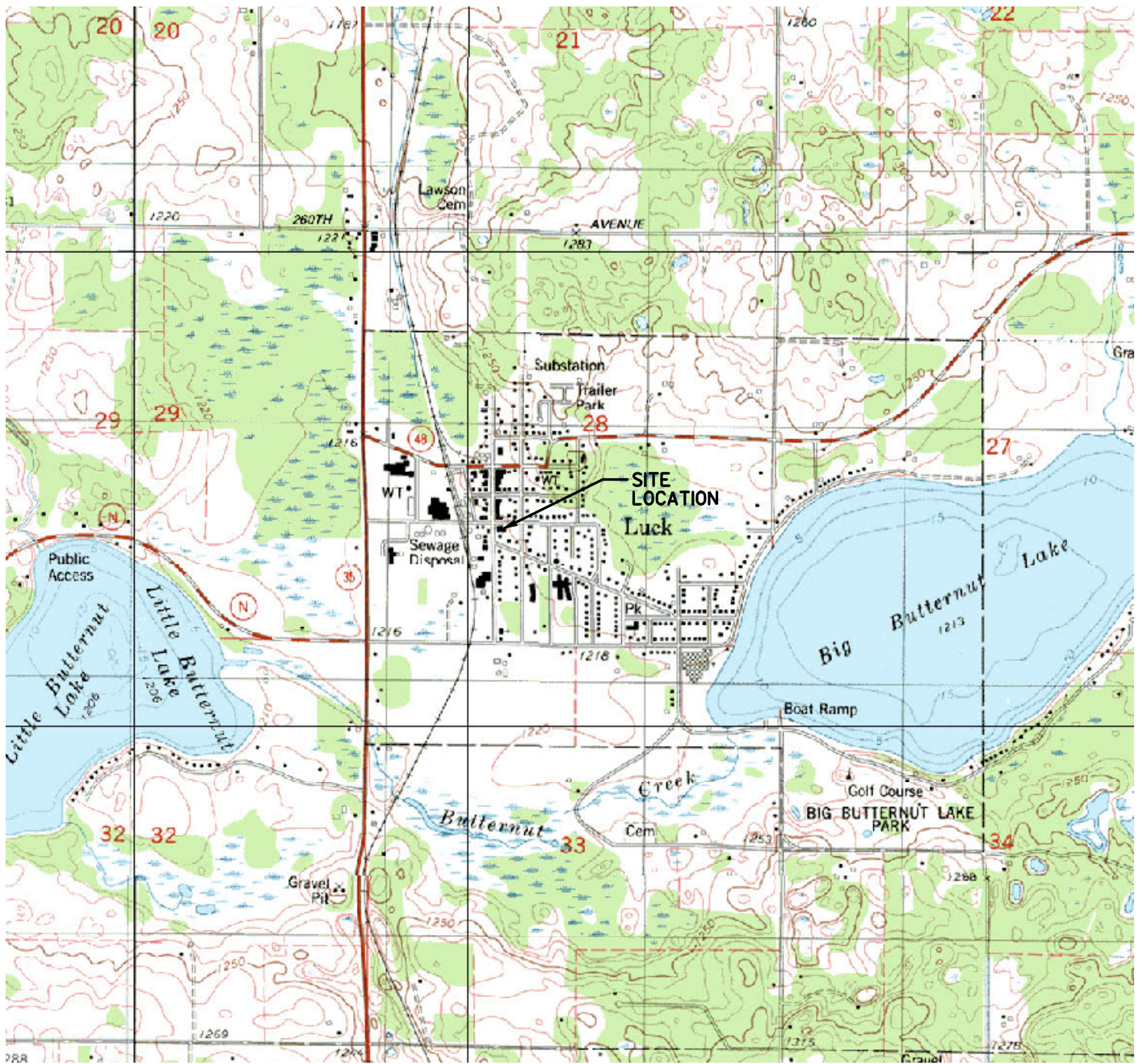
What if the manometer is reading higher than the initial pressure?

This can happen during the spring and after very wet periods. What might occur is that the water table could rise to a point under the intake pipe in the basement floor causing the fan not to be able to suction air properly from the soil. This would most likely be a temporary situation.

What if the manometer is reading lower than the initial pressure?

This would indicate that the fan is moving more air than before. It could indicate that there is a leak in the vent pipe below the fan or in the seal where the pipe enters the basement floor or sump basket. It could also mean that a major crack or opening has occurred near the suction point in the floor. Small fluctuations will occur due to the moisture content of the soil.

Initial operating pressure 3.5 Date of Installation 9-8-2011



Luck Quadrangle
 Wisconsin - Polk County
 7.5 minute series (Topographic)
 Contour Interval = 10 feet

FIGURE D.2.a
SITE LOCATION MAP












LAUNDRY BASKET
 LUCK, WISCONSIN



**TRANSPORTATION • MUNICIPAL
 DEVELOPMENT • ENVIRONMENTAL**
 1835 N. Stevens St. Rhinelander, WI 54501
 715-362-3244 1-800-844-7854 Fax: 715-362-4116
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F.B.	PROJECT		SHEET _____ of _____
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LEGEND

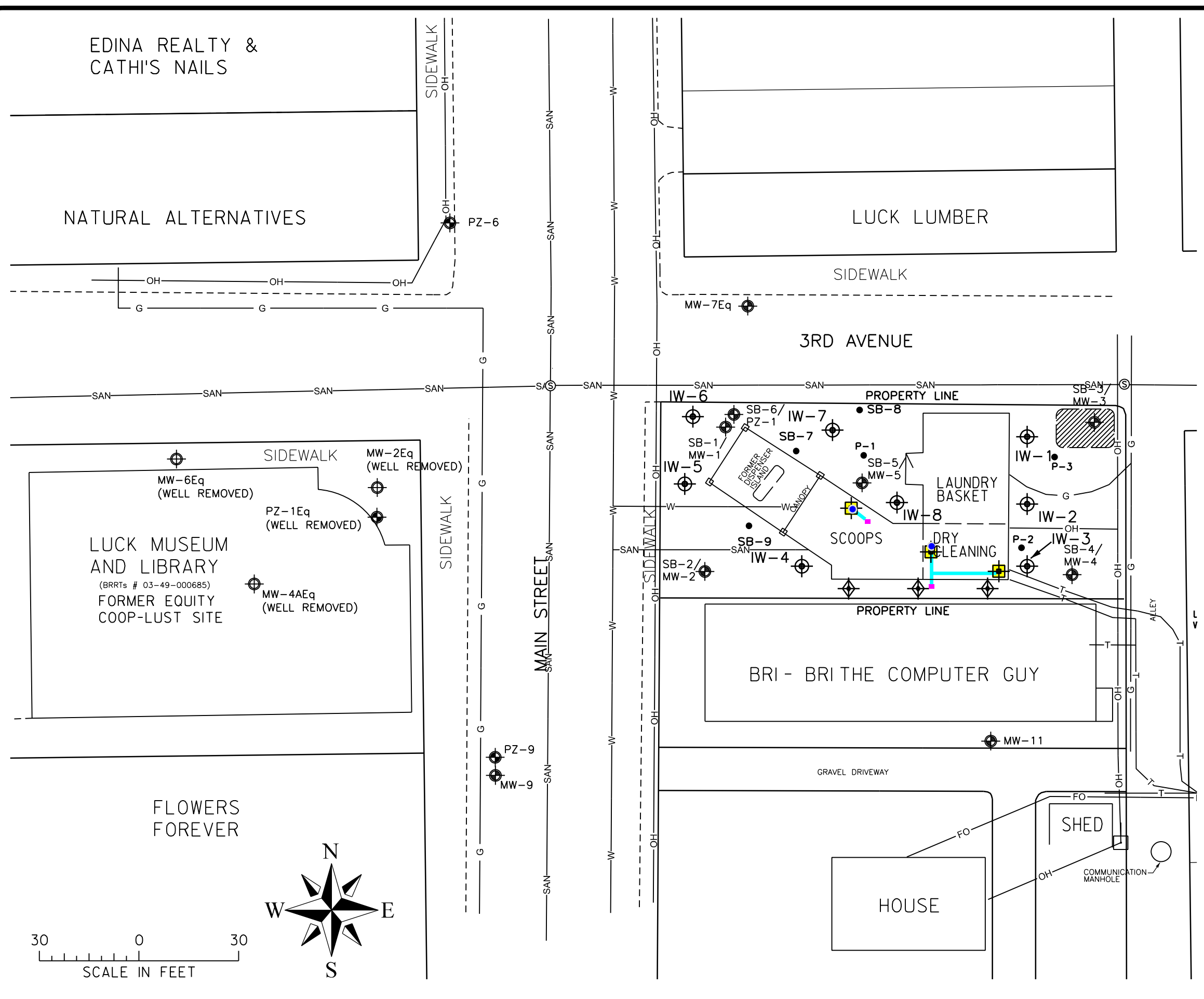
- W— WATERMAIN
- OH— OVERHEAD ELECTRIC
- G— UNDERGROUND GAS LINE
- T— UNDERGROUND TELEPHONE
- ⊕_{SAN} SANITARY SEWER MANHOLE AND UNDERGROUND LINE
- FO— FIBER OPTIC
- SS— STORM SEWER
-  SUSPECTED LOCATION OF FORMER UST
-  VAPOR/SOIL SAMPLE WITH LABEL
- _{SB-8} MSA SOIL BORING
- PROPERTY LINE
-  FIBER OPTIC BOX/ COMMUNICATION BOX
-  STORM SEWER GRATE
-  INJECTION WELL - PERMANENT INSTALLED 9/7/11
-  SUBSLAB DEPRESSURIZATION POINT - INSTALLED 9/9/11
-  TEMPORARY INJECTION POINT (GEOPROBE) - POSSIBLE FUTURE
-  PIPE
-  FAN
-  MANOMETER
-  SUBSLAB DEPRESSURIZATION POINT

THE SCOOPS SYSTEM FAN IS LOCATED IN THE ATTIC OF THE BUILDING AND DISCHARGES THROUGH THE ROOF. THE FORMER DRY CLEANING AREA SYSTEM FAN IS MOUNTED ON THE OUTSIDE OF THE SOUTH WALL OF THE BUILDING AND DISCHARGES 12" ABOVE THE ROOF.

FIGURE D.2.b

**INJECTION WELL & SUB-SLAB DEPRESSURIZATION POINTS
LAUNDRY BASKET
LUCK, WISCONSIN**

MSA TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL 1835 N. Stevens St., P.O. Box 1000, Waukesha, WI 54901 715-962-7344 • 800-848-7854 Fax: 715-962-4116 © MSA PROFESSIONAL SERVICES	
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EDINA REALTY & CATHI'S NAILS

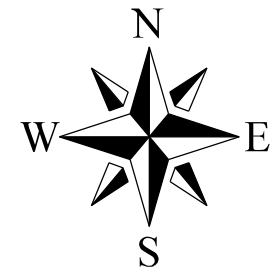
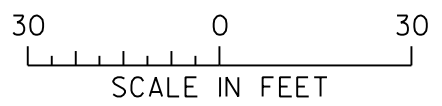
NATURAL ALTERNATIVES

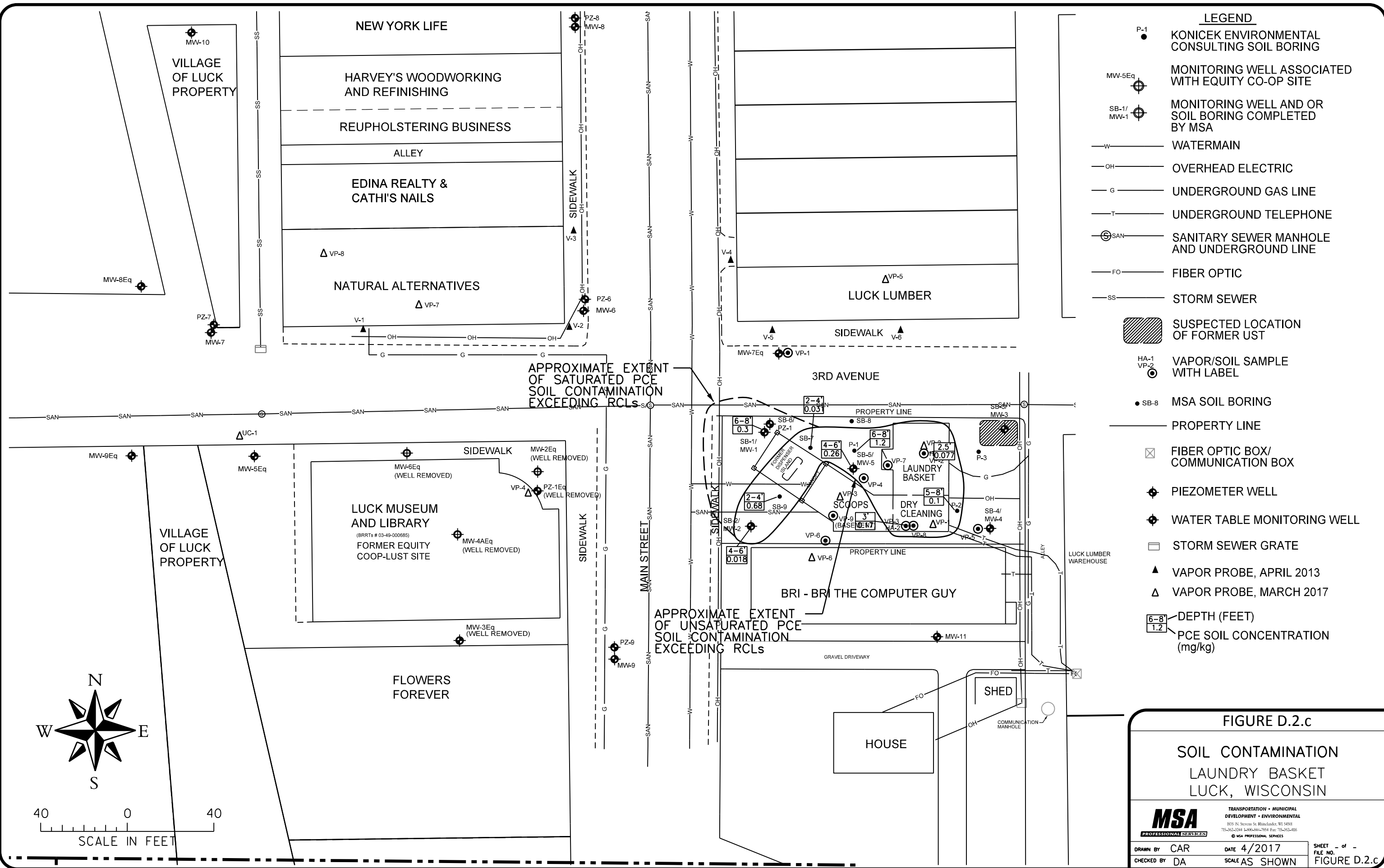
LUCK LUMBER

LUCK MUSEUM AND LIBRARY
(BRRTs # 03-49-000685)
FORMER EQUITY COOP-LUST SITE

BRI - BRITHE COMPUTER GUY

FLOWERS FOREVER





- LEGEND**
- P-1 ● KONICEK ENVIRONMENTAL CONSULTING SOIL BORING
 - MW-5Eq ⊕ MONITORING WELL ASSOCIATED WITH EQUITY CO-OP SITE
 - SB-1/ MW-1 ⊕ MONITORING WELL AND OR SOIL BORING COMPLETED BY MSA
 - W — WATERMAIN
 - OH — OVERHEAD ELECTRIC
 - G — UNDERGROUND GAS LINE
 - T — UNDERGROUND TELEPHONE
 - SAN — SANITARY SEWER MANHOLE AND UNDERGROUND LINE
 - FO — FIBER OPTIC
 - SS — STORM SEWER
 - ▨ SUSPECTED LOCATION OF FORMER UST
 - HA-1 VP-2 ⊙ VAPOR/SOIL SAMPLE WITH LABEL
 - SB-8 MSA SOIL BORING
 - PROPERTY LINE
 - ⊠ FIBER OPTIC BOX/ COMMUNICATION BOX
 - ⊕ PIEZOMETER WELL
 - ⊕ WATER TABLE MONITORING WELL
 - ⊠ STORM SEWER GRATE
 - ▲ VAPOR PROBE, APRIL 2013
 - △ VAPOR PROBE, MARCH 2017
 - 6-8' 1.2' — DEPTH (FEET)
 - 6-8' 1.2' — PCE SOIL CONCENTRATION (mg/kg)

APPROXIMATE EXTENT OF SATURATED PCE SOIL CONTAMINATION EXCEEDING RCLs

APPROXIMATE EXTENT OF UNSATURATED PCE SOIL CONTAMINATION EXCEEDING RCLs

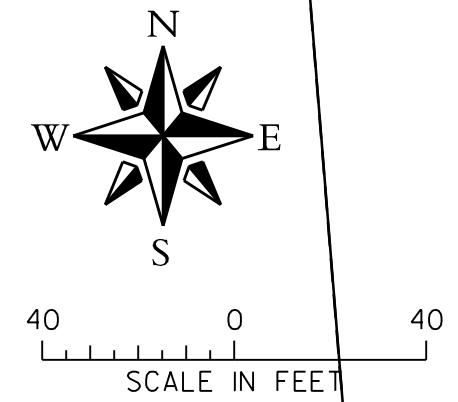
FIGURE D.2.c

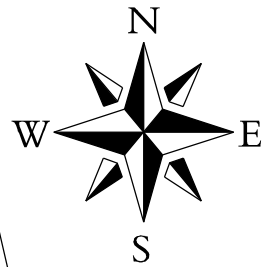
**SOIL CONTAMINATION
LAUNDRY BASKET
LUCK, WISCONSIN**

MSA
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL PROFESSIONAL SERVICES
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715-382-2344 FAX 715-382-2354

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FILE NO.
FIGURE D.2.c





LEGEND

- P-1 ● KONICEK ENVIRONMENTAL CONSULTING SOIL BORING
- MW-5Eq ◉ MONITORING WELL ASSOCIATED WITH EQUITY CO-OP SITE
- SB-1 / MW-1 ◉ MONITORING WELL AND OR SOIL BORING COMPLETED BY MSA
- W— WATERMAIN
- OH— OVERHEAD ELECTRIC
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- T— UNDERGROUND TELEPHONE
- SAN— SANITARY SEWER MANHOLE AND UNDERGROUND LINE
- FO— FIBER OPTIC
- SS— STORM SEWER
- ▨ SUSPECTED LOCATION OF FORMER UST
- HA-1 / VP-2 ◉ VAPOR/SOIL SAMPLE WITH LABEL
- SB-8 MSA SOIL BORING
- PROPERTY LINE
- ☒ FIBER OPTIC BOX / COMMUNICATION BOX
- ◉ PIEZOMETER WELL
- ◉ WATER TABLE MONITORING WELL
- ☐ STORM SEWER GRATE
- ▲ VAPOR PROBE, APRIL 2013
- ESTIMATED EXTENT OF GROUNDWATER PLUME EXCEEDING DNR ENFORCEMENT STANDARDS
- ESTIMATED EXTENT OF GROUNDWATER PLUME EXCEEDING DNR PREVENTATIVE ACTION LIMITS

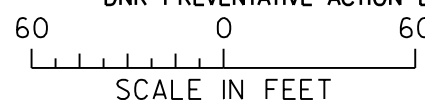
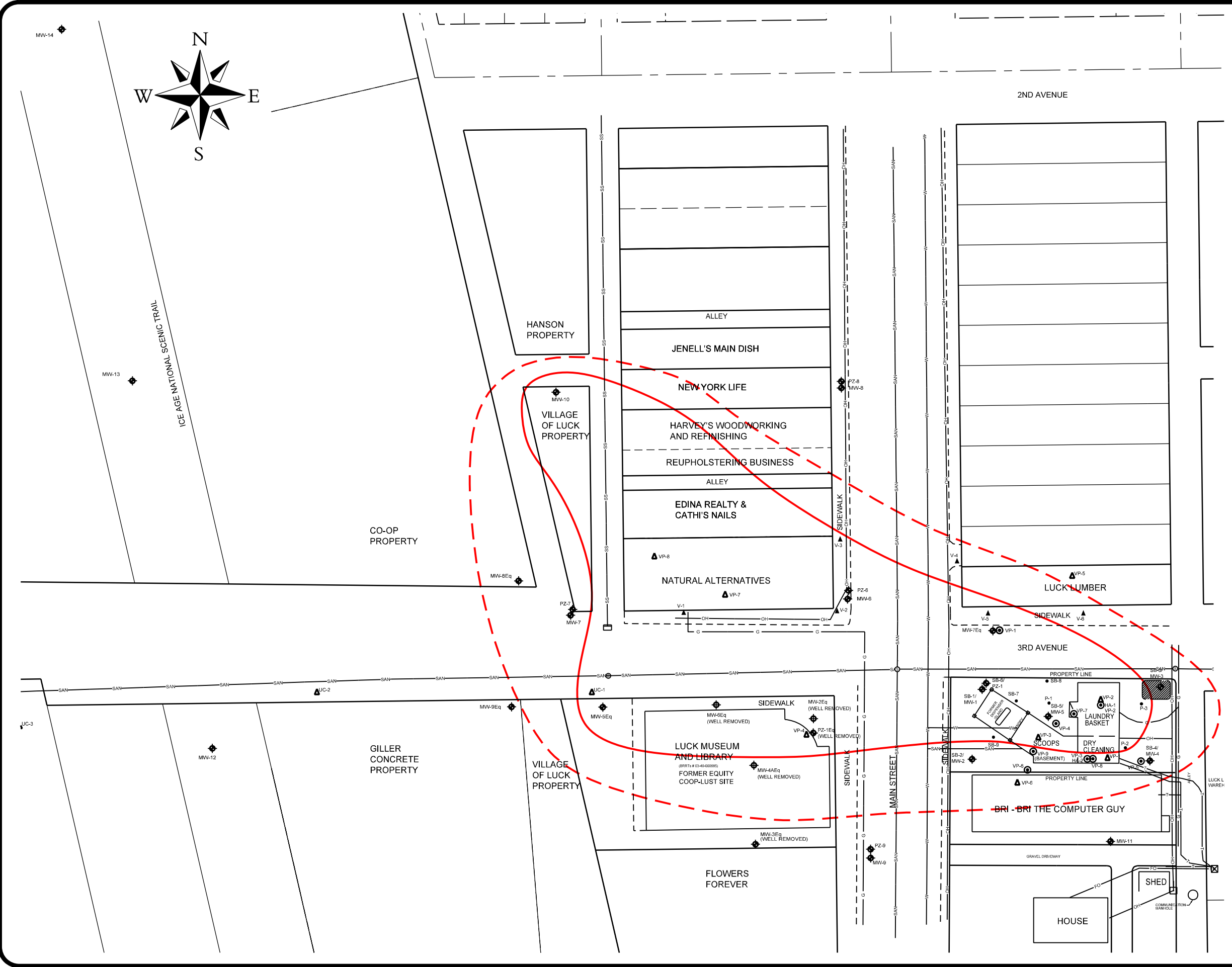


FIGURE D.2.d
MARCH 2017
GROUNDWATER ISOCONCENTRATION
LAUNDRY BASKET
LUCK, WISCONSIN

MSA TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
 835 N. Stevens St., Blue Island, WI 54806
 TEL: 920-2344 FAX: 920-2354
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D.3 Site Photographs

Vapor Mitigation @ Laundry Basket Luck WI September 9, 2011



Suction point near dry cleaning equipment



Piping to 2nd suction point located near Water heater @SE corner



Radonaway GP501 fan for both suction points in laundry area

D.3 Site Photographs

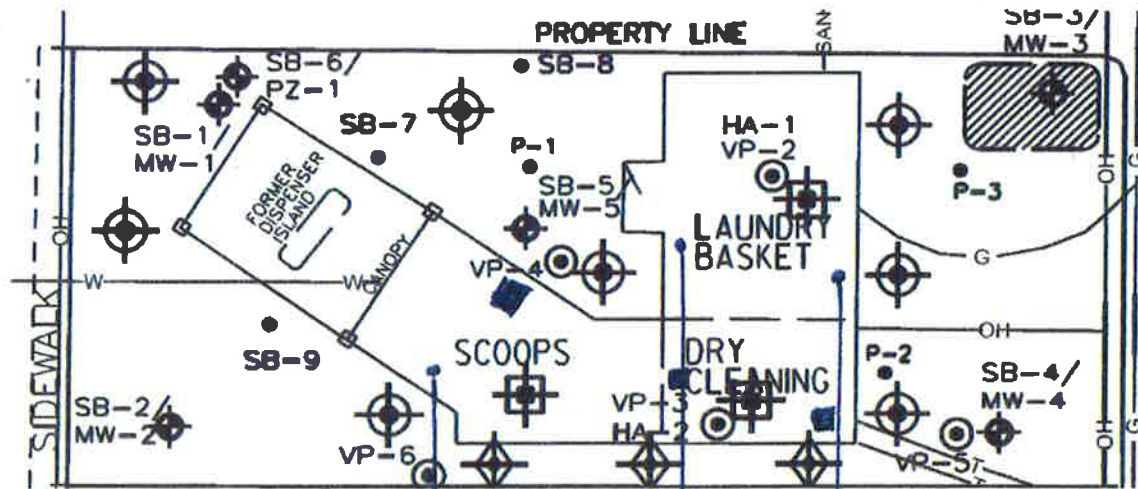


Suction point in the basement below the Scoop



Pipe passing through stairway closet and roof penetration

D.3 Site Photographs



Tests points located ~10' from each suction point with fans operating.

-151 Pa
-3.5 Pa
-7.0 Pa

All test locations varied from slightly negative $<.05$ Pa to slightly positive <2.0 Pa with no suction applied. These readings varied due to open doors and dryers operating.

3 Suction Pits are indicated by ■

Fan locations are in the attic above the Scoop Ice Cream Shop and outside on the south side of the building near the former dry cleaning equipment.

2 Radonaway GP501 fans were installed both operating at ~ 3.5 " WC

D.4.a Inspection Log Form

State of Wisconsin
 Department of Natural Resources
 dnr.wi.gov

Continuing Obligations Inspection and Maintenance Log

Form 4400-305 (2/14)

Page 1 of 2

Directions: In accordance with s. NR 727.05 (1) (b) 3., Wis. Adm. Code, use of this form for documenting the inspections and maintenance of certain 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 Open Records law [ss. 19.31-19.39, Wis. Stats.]. When using this form, identify the condition that is being inspected. See the closure 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 closure approval letter. Do NOT delete previous inspection results. This form was developed to provide a continuous history of site inspection results. The Department of Natural Resources project manager is identified in the closure letter. The project manager may also be identified from the database, BRRTS on the Web, at <http://dnr.wi.gov/botw/SetUpBasicSearchForm.do>, by searching for the site using the BRRTS ID number, and then looking in the "Who" section.

Activity (Site) Name The Laundry Basket	BRRTS No. 02-49-544893
---------------------------------------------------	----------------------------------

Inspections are required to be conducted (see closure approval letter):

annually
 semi-annually
 other – specify _____

When submittal of this form is required, submit the form electronically to the DNR project manager. An electronic version of this filled out form, or a scanned version may be sent to the following email address (see closure approval letter):

philip.richard@wisconsin.gov

Inspection Date	Inspector Name	Item	Describe the condition of the item that is being inspected	Recommendations for repair or maintenance	Previous recommendations implemented?	Photographs taken and attached?
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:			<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N

{Click to Add/Edit Image}

Date added:





Title:

{Click to Add/Edit Image}

Date added:

Title:

D.4.b Inspection Checklist

SYSTEM COMPONENT		PURPOSE	CHECK FOR	PROPER OPERATION	WHAT TO FIX
FAN		<p>The fan creates a vacuum and lowers pressure below the building slab.</p> <p>The fan also removes soil gases from below the slab for discharge outside the building.</p>	<p>Fan operation</p> <p>Fan location</p> <p>Unusual noise/vibration</p>	<p>Fan is on</p> <p>Fan is mounted outside and secure</p> <p>Fan motor is quiet (loud motor/excessive vibrations may indicate problem)</p>	<p>Fan may need to be replaced every 15 to 20 years.</p> <p>Replacement fan should have similar specifications as original with respect to flow and vacuum (see Appendix A specifications).</p>
SUCTION DROP POINT w/ VENT PIPE		<p>Suction Pit: Soil gases are collected in a pit below the slab, and a tight seal around the pipe prevent gases from entering the building.</p> <p>Vent Pipe: Pipe conveys vacuum from the fan and collects soil gases for discharge outside the building.</p>	<p>Suction pit seal</p> <p>Vent pipe condition</p>	<p>Seal is air tight around pipe slab penetration.</p> <p>Vent pipe is connected to fan, has not cracked.</p>	<p>Suction pit seal or vent pipe may need to be sealed or replaced if cracks or leaks appear.</p>
MANOMETER/PRESSURE GAUGE		<p>Measures differential pressure between the vacuum side of the vent and the indoor space.</p> <p>The manometer measurement confirms that the fan is producing a vacuum beneath the slab.</p>	<p>Liquid level in manometer</p>	<p>Liquid level in manometer is at approximately 3.5 (noted on the sticker near the gauge).</p>	<p>A change in liquid level indicates a change in the vacuum below the slab. This could be caused by a failure of the fan, blockage of vent pipe, change in water level below the building, or other conditions.</p> <p>Troubleshoot or hire a professional to inspect cause and repair if needed.</p>
OUTDOOR VENT PIPE		<p>Pipe carries soil gas from beneath the building slab and vents them outside the building.</p>	<p>Vent pipe condition</p> <p>Vent pipe location</p>	<p>Vent pipe remains connected to fan.</p> <p>End of pipe is free from obstructions/debris.</p> <p>The exhaust is more than 15 feet from windows or air intakes.</p>	<p>Vent pipe may require replacement or cleaning to remove ice or debris.</p>