



Sub-Slab Vapor Investigation Report

Nor-Lake Inc.
891 Highway U
Hudson, WI
BRRTS #02-56-00089

Prepared for:

Nor-Lake Inc.
727 2nd Street
Hudson, WI 544016

December 2019

Ingenuity, Integrity, and Intelligence.

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Sub-Slab Vapor Investigation Report

Nor-Lake Inc.
891 Highway U
Hudson, WI

This report prepared by:



Mitchell C. Banach, PG
Environmental Scientist

This report reviewed by:



Gregory M. Aldrian, PG
Environmental Project Manager



3433 Oakwood Hills Parkway
Eau Claire, WI 54701-7698
715.834.3161 • Fax: 715.831.7500
www.AyresAssociates.com

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Executive Summary

Nor-Lake, Inc. retained Ayres Associates to conduct an investigation of sub-slab soil vapor at the Nor-Lake manufacturing plant located in Town of Hudson, WI. Methods included four rounds of sub-slab vapor sampling from 10 points (VS-1 through VS-10) near the source area on May 15, June 13, July 2, and November 21, 2019. The SVE system was shut down for at least 30 days prior to the start of sub-slab vapor sampling to avoid interference with sampling results. Pace Analytical Services analyzed vapor samples by method TO-15 for the following chlorinated VOCs: 1,1,1-trichloroethane, 1,1,2-trichloroethene, 1,1-dichloroethane, 1,1-dichloroethene, chloroethane, dichlorodifluoromethane, tetrachloroethene, trichloroethene, trichlorofluoromethane, vinyl chloride, cis-1,2-dichloroethene, and trans-1,2-dichloroethene.

Although several chlorinated VOCs were detected during the investigation, trichloroethene (TCE) was the only compound to exceed a sub-slab vapor risk screening level (VRSL). Trichloroethene concentrations exceeded the residential VRSL of 70 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) during at least one of the three sampling rounds at VS-1 ($257 \mu\text{g}/\text{m}^3$), VS-2 ($198 \mu\text{g}/\text{m}^3$), VS-3 ($249 \mu\text{g}/\text{m}^3$), VS-4 ($424 \mu\text{g}/\text{m}^3$), and VS-7 ($160 \mu\text{g}/\text{m}^3$). However, TCE concentrations were below the large commercial/industrial VRSL of $880 \mu\text{g}/\text{m}^3$.

Based upon WDNR Guidance RR-800, Ayres Associates recommends that no additional sampling rounds are warranted as all concentrations of VOCs analyzed during both the cooling and heating seasons were well below large commercial/industrial VRSLs that apply to the site.

Introduction

Nor-Lake, Inc. retained Ayres Associates to conduct an investigation of sub-slab soil vapor at the Nor-Lake manufacturing plant located in Town of Hudson, WI. This report documents the technical findings of the investigation and presents conclusions and recommendations regarding the sub-slab soil vapor. The report was prepared and is organized in accordance with the requirements listed in Wisconsin Administrative Code NR 716.15.

Site Location

The primary Nor-Lake manufacturing site is located at 891 CTH U, Hudson, WI. The site is located in the Northwest 1/4 of Section 22, Township 29 North, Range 19 West, in the Town of Hudson, St. Croix County, Wisconsin. The associated plume of groundwater contamination extends approximately 2.25 miles west/northwest of the subject property and extends into Section 17, Township 29N, Range 19 West in the Town of Hudson. The site location is depicted on Figure 1 in Appendix A.

Project Contacts

The project contacts for this site are as follows:

Owner/RP: Nor-Lake, Inc.
727 2nd Street
Hudson, WI 54016
Contact: Tim Myers (tmyers@norlake.com)

Consultant: Ayres Associates
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
Contact: Greg Aldrian, PG (AldrianG@AyresAssociates.com)
Mitchell Banach, PG (BanachM@AyresAssociates.com)
715.834.3161

Laboratory Contractors

Pace Analytical Services, LLC
WDNR Certification No. 999407970
1700 Elm Street, Suite 200
Minneapolis, MN 55414
612.607.6400
Contact: Ryan.Mathieu@pacelabs.com

Investigation Background

Soil and groundwater at the subject property has been historically contaminated with volatile organic compounds (VOCs) and chlorinated solvents; the primary contaminant of concern persisting in groundwater is trichloroethene. Contaminated groundwater below NR 140 ES extends approximately 2.25 miles west/northwest of the subject property. The suspected source of contamination is the septic tank and dry well inside the Nor-Lake facility. The site investigation has included soil sampling and extensive groundwater and drinking water monitoring. Remedial actions have included installation of groundwater recovery wells and aeration tower, active carbon treatment of drinking water, and a soil vapor extraction (SVE) system. The goal of this portion of the site investigation was to investigate the degree and extent of contamination in sub-slab soil vapors and assess the need for mitigation to protect indoor air quality.

Investigation Methods

Methods included three rounds of sub-slab vapor sampling from 10 points (VS-1 through VS-10) near the source area on May 15, June 13, July 2, and November 21, 2019 (see Figure 2 in Appendix A for sample locations). The SVE system was shut down for at least 30 days prior to the start of sub-slab vapor sampling to avoid interference with sampling results.

Mitchell Banach of Ayres Associates installed a brass Vapor Pin® with silicone sleeve at each location by drilling a 1.5-inch (in) hole approximately two inches into the slab and drilling a 5/8-in hole through the remaining portion of slab to allow each pin to be flush-mounted. Sample trains were assembled as follows:

Vapor pin > silicone tubing > purge manifold assembly (PMA) > 1-liter (L) summa canister

Prior to sample collection, Ayres Associates tested each sample train for leaks using water dam and shut-in test methods. Water dams were formed by filling the 1.5-in hole with water and visually monitoring for water level drop over a period of at least five minutes prior to sampling, as well as during sampling, to ensure a tight seal between the silicone sleeve of the pin and the concrete. Shut-in testing was conducted by creating a vacuum of 20 inches of mercury held over a period of at least five minutes prior to sampling. Following leak testing, Ayres Associates purged 180 milliliters (mL) of air volume from the sample train to draw sub-slab vapor into the PMA. Summa canister valves were then opened for sample collection with flow controllers set to draw a maximum of 200 mL per minute. See Appendix B for further description of sample materials and methods.

Ayres Associates noted the time and canister vacuum at the start and end of the sample collection period and field screened sub-slab vapor with a Foxboro TVA-1000 flame ionization detector (FID) and photoionization detector (PID) immediately following sample collection. Pace Analytical Services analyzed vapor samples by method TO-15 for the following chlorinated VOCs: 1,1,1-trichloroethane, 1,1,2-trichloroethene, 1,1-dichloroethane, 1,1-dichloroethene, chloroethane, dichlorodifluoromethane, tetrachloroethene, trichloroethene, trichlorofluoromethane, vinyl chloride, cis-1,2-dichloroethene, and trans-1,2-dichloroethene. Four rounds of sampling were conducted on May 15, June 13, July 2, and November 21, 2019.

Investigation Results

Although several chlorinated VOCs were detected during the investigation, trichloroethene (TCE) was the only compound to exceed a sub-slab vapor risk screening level (VRSL). Trichloroethene concentrations exceeded the residential VRSL of 70 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) during at least one of the three sampling rounds at VS-1 (257 $\mu\text{g}/\text{m}^3$), VS-2 (198 $\mu\text{g}/\text{m}^3$), VS-3 (249 $\mu\text{g}/\text{m}^3$), VS-4 (424 $\mu\text{g}/\text{m}^3$), and VS-7 (160 $\mu\text{g}/\text{m}^3$). However, TCE concentrations were below the large commercial/industrial VRSL of 880 $\mu\text{g}/\text{m}^3$. Summaries of vapor analytical results and field screening results are presented in Tables 1 and 2, respectively (Appendix C). Laboratory analytical reports are attached in Appendix D.

Potential Receptors

Previous site investigation data, including data from a 1992 SVE pilot study, indicates that soil contamination above NR 720 Residual Contaminant Levels and groundwater contamination above NR 140 Enforcement Standards is limited to the Nor-Lake site. Although contaminated groundwater has migrated off-site and impacted private water supply wells, contaminant concentrations off-site remain below NR 140 Enforcement Standards, and contaminated groundwater above NR 140 Preventive Action Limits is not in contact with building foundations or utility corridors. Therefore, and in accordance with Wisconsin Department of Natural Resources Guidance RR-800, potential receptors for vapor intrusion are limited to the Nor-Lake building.

Conclusions

Analytical results from four rounds of sub-slab vapor sampling indicate that although TCE is present at concentrations above residential VRSLs, chlorinated VOCs analyzed are well below large commercial/industrial VRSLs that apply to the site.

Recommendations

Based upon WDNR Guidance RR-800, Ayres Associates recommends that no additional sampling rounds are warranted as all concentrations of VOCs analyzed during both the cooling and heating seasons were well below large commercial/industrial VRSLs that apply to the site.

Standard of Care

This Sub-Slab Vapor Investigation Report is based on data obtained by Ayres Associates through collection and analysis of soil and groundwater samples. Soil and water qualities reported apply only to the specific locations and times at which the work was performed.

Conclusions and recommendations made represent our professional engineering judgment in interpreting these data. Data, computations, and correspondence supporting the information presented in this report are on file at Ayres Associates

NR 712.09 Submittal Certification

I, Mitchell C. Banach, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Mitchell C. Banach
Environmental Scientist

December 6, 2019
Date

I, Gregory M. Aldrian, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



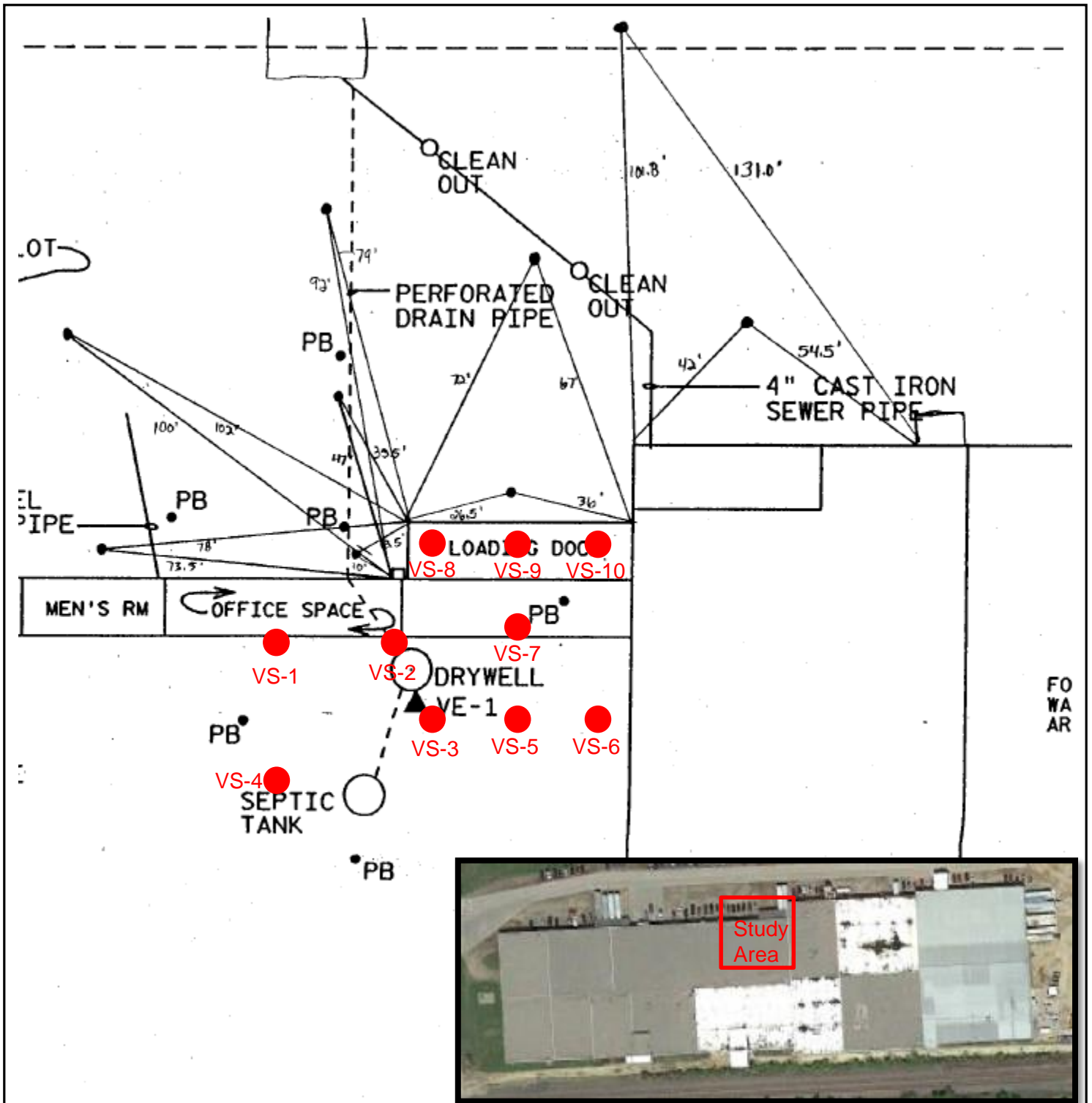
Gregory M. Aldrian
Environmental Project Manager

December 6, 2019
Date

References

Wisconsin Department of Natural Resources. January 2018. Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin. Publication RR-800.

Appendix A
Figures



Source: Site Plan from Soil Vapor Extraction System Work Plan, Ayres Associates, 1992; Google Earth 2018 aerial



Approximate Scale: 1" = 40'

Figure 2 – Vapor Sample Location Map

Nor-Lake
891 County Road U
Hudson, WI
December 2019

51-0367.00



Appendix B
Materials & Methods Documentation



Standard Operating Procedure Installation and Extraction of the FLX-VP™ VAPOR PIN®

Updated January 18, 2019

Scope:

This standard operating procedure describes the installation, use, and extraction of the FLX-VP™ for sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the FLX-VP™ for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled FLX-VP™ [FLX-VP™ barb fitting with O-ring, FLX-VP™ base, and silicone sleeve (Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole must be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;

- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the FLX-VP™.



Figure 1. Assembled FLX-VP™

Installation Procedure:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Set up wet/dry vacuum to collect drill cuttings.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

- 3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.
- 4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole must be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.
- 5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.
- 6) Place the lower end of the assembled FLX-VP™ into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the barb fitting and tap the FLX-VP™ into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the FLX-VP™ to avoid damaging the barb fitting.



Figure 2. Installing the FLX-VP™

During installation, the silicone sleeve will form a slight bulge between the slab and the FLX-VP™ shoulder. If the silicone sleeve slides excessively upward, creating a large bulge at the top of the FLX-VP™, reinstall the FLX-VP™ using a new silicone sleeve. The top of the silicone sleeve should only cover the lower one or two barbs of the FLX-VP™. Place the protective cap on FLX-VP™ to prevent vapor loss prior to sampling (Figure 3).



Figure 3. Installed FLX-VP™

- 7) For flush mount installations, cover the FLX-VP™ with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

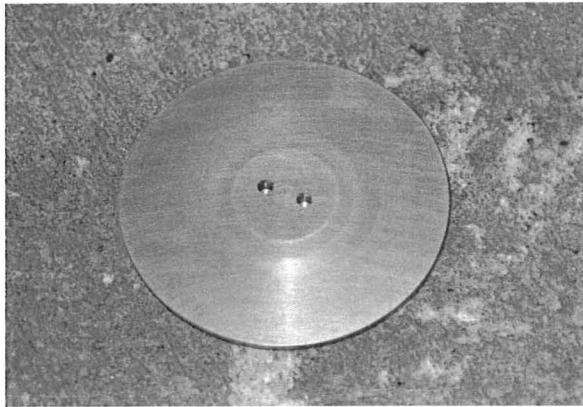


Figure 4. Secure Cover Installed

- 8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.
- 9) Remove protective cap and connect sample tubing to the barb fitting of the FLX-VP™. This connection can be made using a short piece of Tygon™ tubing to join the FLX-VP™ with the Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the FLX-VP™ as possible to minimize contact between soil gas and Tygon™ tubing.

If you wish to directly connect to FLX-VP™ accessory (e.g. Swagelok fitting, TO-17 tube, or quick connect) unscrew the barb fitting and replace with accessory (Figures 6 and 7).



Figure 5. FLX-VP™ sample connection

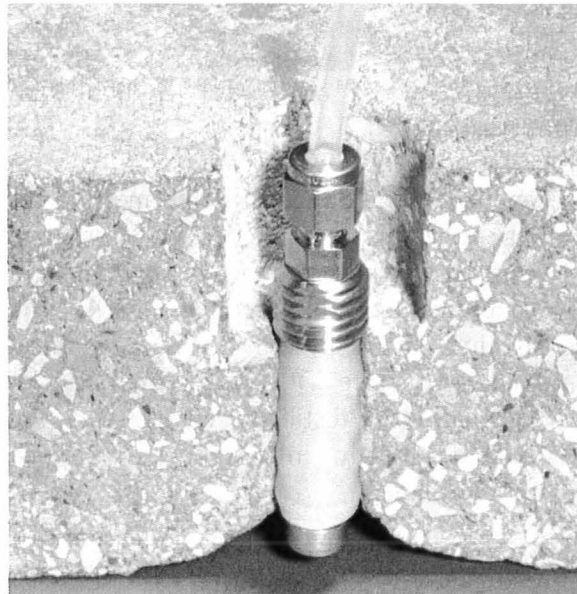


Figure 6. FLX-VP™ with Swagelok® connection



Figure 7. FLX-VP™ with TO-17 Sorbent tube connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the FLX-VP™ via Mechanical Means (Figure 8). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.



Figure 8. Water dam used for leak detection

1) Collect sub-slab soil gas sample or pressure reading. When finished, replace the barb fitting and protective cap and flush mount cover until the next event. If the sampling is complete, extract the FLX-VP™.

Extraction Procedure:

- 1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the FLX-VP™ (Figure 9). Continue turning the tool clockwise to pull the FLX-VP™ from the hole into the installation/extraction tool.
- 2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

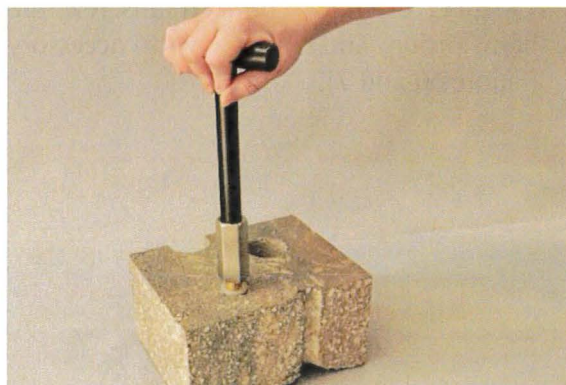


Figure 9. Removing the FLX-VP™

- 3) Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the FLX-VP™ in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, STAINLESS – ½ hour, BRASS 8 minutes

periodically. These parts are available on-line at www.vaporpin.com

The FLX-VP™ is designed to be used repeatedly, however, accessories, replacement parts and supplies will be required

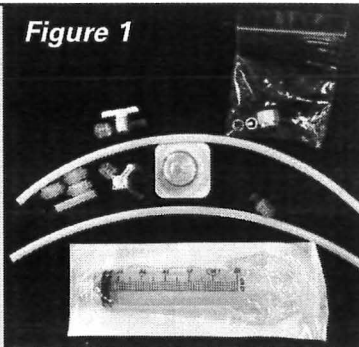
Assembly of the Purge Manifold Assembly (PMA)



Each PMA should include the following:

2-1' sections of tubing, 1-1" section of tubing, 1-four way valve, 1-two way valve, 1-unidirectional valve, 3-male slip adapters, 1-set of fittings and ferrules, 1-moisture filter and 1-60mL syringe (Figure 1).

Figure 1



Assemble the manifold in accordance with *Figure 2* and *Figure 3*. Ensure that the orientation of the unidirectional valve matches the figures below or purging the manifold will not be possible.

Figure 2

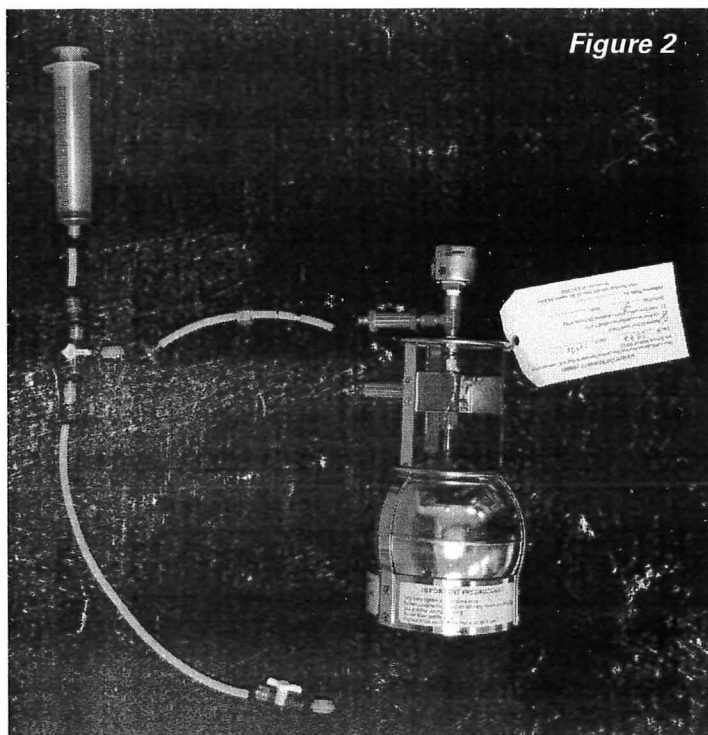
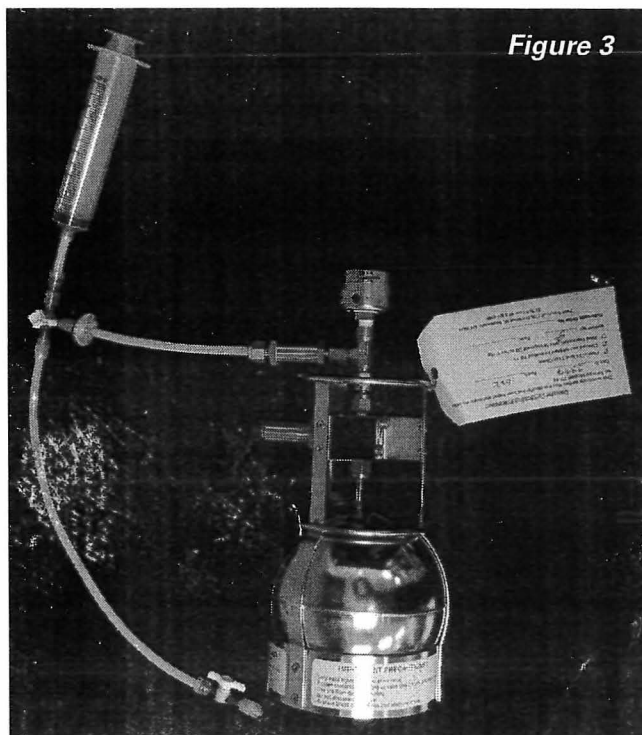


Figure 3



Purging the manifold

(General guidelines, subject to state or client specific guidelines).

- 1. DISCLAIMER: Do not open canister until ready to collect sample.**
- The purge manifold assembly contains four valves, including the canister valve. They are as follows:
 - a. Canister valve – attached to the canister. Do not open until ready to collect sample.
 - b. 4-way valve – attached to canister assembly via Teflon tubing. This valve has 3 directions “open” at a time with only one closed direction (indicted by the “OFF” tab).
 - c. Unidirectional valve – Attached to the male luer fitting on the 4-way valve. This valve will allow volume to exit the assembly, but cannot be pushed back into the assembly in this direction. Once installed, the valve will be active.
 - d. 2-way valve – This is the valve closest to the sampling point. It is used to close off the sampling point to allow purging of ambient air in the Teflon lines prior to sampling. It is closed when the white valve is perpendicular to the valve body.
- After assembly, set the 2-way valve to the closed position. See *Figure 1*.
- Turn the 4-way valve OFF tab to the direction on the 4-way valve that will allow flow in all three connected directions (the “OFF” tab should face in the only direction without a connection). See *Figure 2*.
- Attach the syringe to the unidirectional valve with a 1” piece of Teflon tubing. Pull aliquots of the syringe out of the unidirectional valve until the gauge on the canister reaches the required vacuum level. See *Figure 3* and *Figure 4*.
- Allow the canister and Purge Manifold to sit undisturbed for the desired amount of time, and read the canister gauge. If notable drops in pressure occur, inspect the system for potential leaks and retest. If no pressure change is observed, proceed to step 7. The manifold assembly has now been determined to be free of leaks.
- Open the two way valve to allow air from the sampling point to fill the lines of the Purge Manifold Assembly. The canister pressure should return to 0.
- (Optional)** Using the syringe, purge the line with the desired aliquots of sampling point volume. Multiple purges may be necessary.
- Open the canister to collect sample.

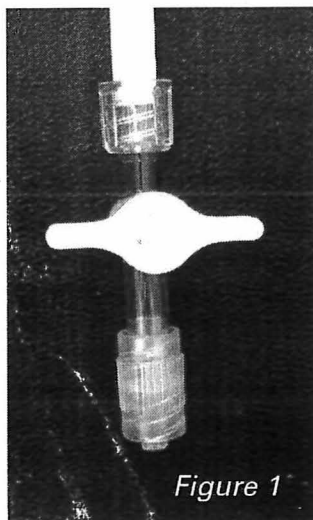


Figure 1

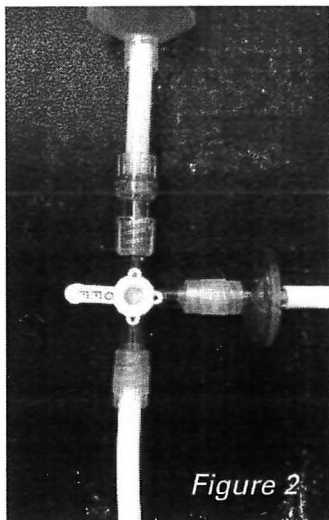


Figure 2

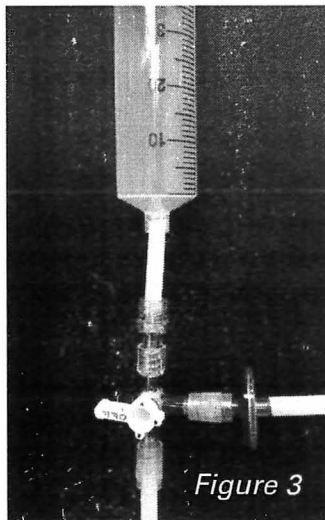


Figure 3

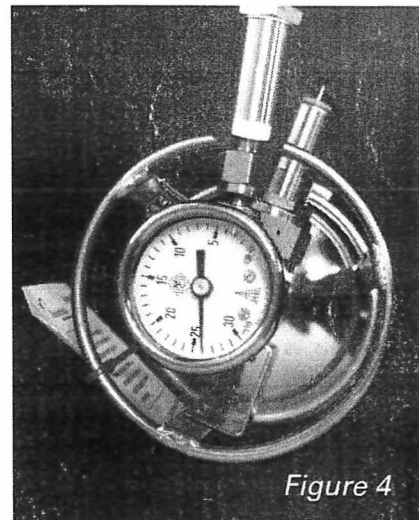


Figure 4

AIR CANISTERS

Instructions for Canister Grab Sampling

(Tools needed: one ended 9/16" wrench)

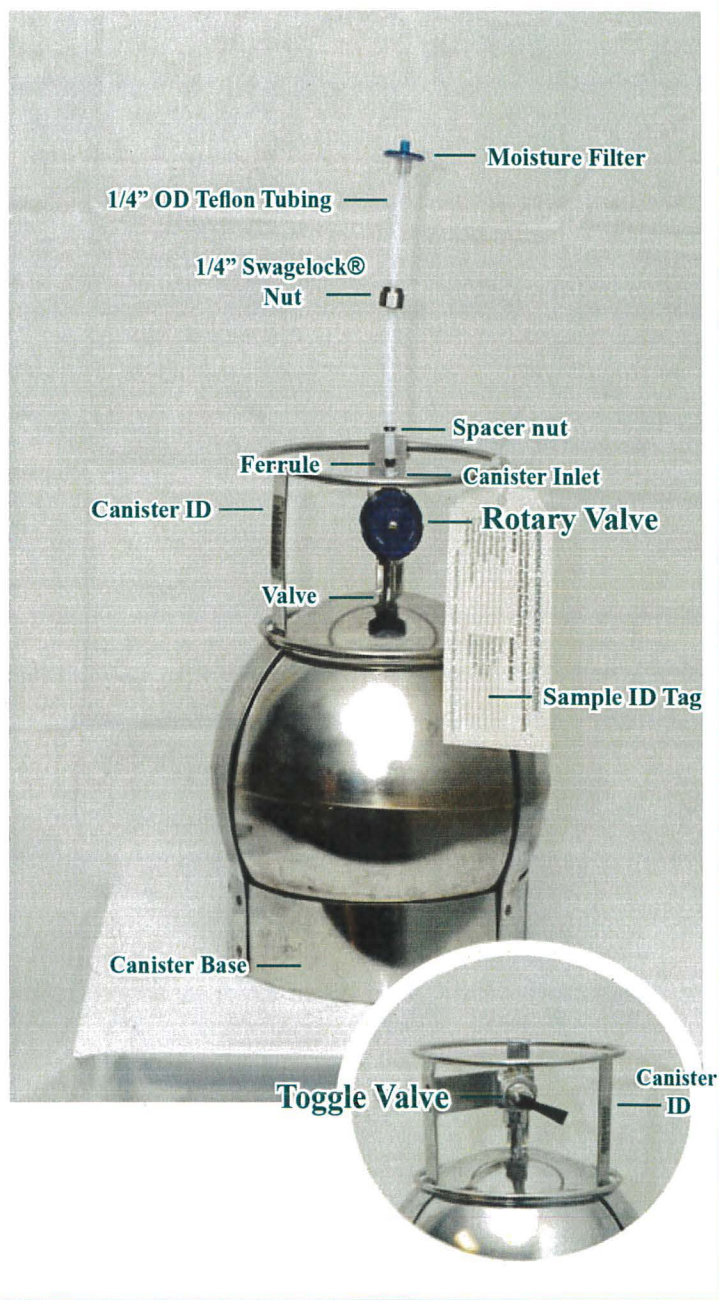
1. INSPECTION – Inspect your canister shipment upon arrival. Compare the contents with the packing slip and notify Pace Analytical of any discrepancy or damage. Familiarize yourself with the contents you received by comparing them to the pictures on the right. Do not open the valve until you are ready to sample. Even a small loss of vacuum will compromise your sample.

2. CONNECTION – Remove the brass cap from the top of the can with a 9/16" wrench. If you are connecting to a predetermined sampling point you may have received the following: 6 inches of 1/4 inch OD Teflon tubing, 1/4 inch Swagelock® nut, ferrule, spacer nut and moisture filter (if requested). Connect these items in series using the pictures on the right as a guide. The spacer fits between the nut and the ferrule. The ferrule must be pointed down toward the canister. Please note the connection to the canisters utilizes Swagelock® threading. For a proper connection, it's important that no cross-threading occurs. The canister connection is made by hand-tightening the Swagelock® nut. Once connected, use an open ended (9/16") wrench to further tighten the connection. Make sure that the connection is firmly tightened. The final connection must be leak tight recognizing also that over-tightening can cause leaks as well. Do not use pliers or adjustable-end wrenches to tighten this Swagelock® connection. Use only open ended wrenches for tightening. The canister is now ready for sampling.

3. SAMPLING – To begin sampling simply open the canister valve (you may have either a rotary valve or a toggle valve). One full turn counter clockwise for the rotary valve is sufficient. The toggle valve will open by flipping upward. During the initial sampling process you will hear a rush of air. Without a flow restriction the canister will fill in approximately 30-45 seconds.

4. COMPLETION – After sampling is complete, close the canister valve. Disassemble the components and return them in the original shipping package they were received in. Verify the contents for return to the laboratory. Complete the Chain-of-Custody form and return with the samples to the laboratory. Be sure to reference the canister ID on the Chain-of-Custody.

Grab Sample Configuration



Sampling Instructions

Restricted flow Sampler

Intended Applications:

30 minute sampling of **6 Liter Canister**

5 minute sampling of **1 Liter Canister**

All media is pre-assembled for your convenience
Do not attempt to remove the gauge from the canister

Inspect your media

- Remove the protective foam inserts and other packing material from the box. Set these inserts aside for return shipment
- Lift and carry the canister by the frame ring near the top.
- Review the contents of the package to ensure you have everything you need prior to sampling.
- Consult your Pace Project Manager, or call the Air Technical Hotline @ 612-607-6386 if you have any questions.

Prepare for Sampling (Figure 1)

- Before sampling, you will first verify the initial vacuum.
- With the brass cap on the assembly still in place, open the canister to check the initial vacuum.
 - Rotary Valve requires on full turn counter clockwise
 - Toggle Valve requires that you flip the valve upwards
- Record initial vacuum on the Chain of Custody
 - Initial field reading (-inches of Hg)
- Close the canister valve before moving on to next step.

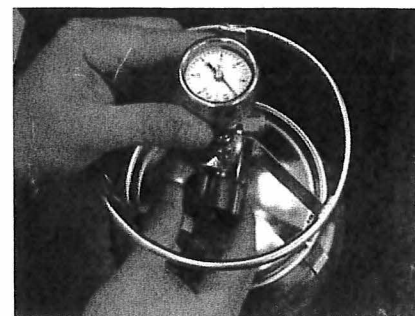


Figure 1
Verify the initial vacuum.

Collect Samples (Figure 2)

- Remove the brass cap from the side of the sampling assembly by turning counter clockwise with a 9/16 inch wrench. (Figure 2)
- Position the canister for sampling
 - NOTE: If tubing and fittings are required at this site, you will find these items and all instructions in the enclosed plastic bag.
- Connect the sampling line as shown in the picture on the right. Open the canister valve to begin sampling
- The Decline in vacuum should be proportional to the collection time. After desired sampling time, close canister valve.
 - NOTE: The canister will continue to fill until the internal pressure reaches ambient conditions (0psig). You are responsible for closing the valve on the canister at the desired time.
- To end the sampling process close the valve on the canister and replace brass cap to the side of the gauge.
- Verify final field vacuum by opening the canister.
 - Record the -inches of Hg on the COC.
 - Close canister valve

Sample Connection
Point



Figure 2
Remove the brass cap and connect the sampling line

Return Samples

- Repackage the canister with the protective foam insert, and other packaging materials, to insure the integrity of your sample as it travels back to the lab.
- Complete the shipping and COC documents
- Return to Pace Analytical for analysis.
- Return all components in the package as you received them. Complete a Chain of Custody record and return with the sample to Pace Analytical for analysis.

Appendix C
Summary Tables

Table 1 - Summary of Sub-Slab Vapor Analytical Results
Nor-Lake, 891 County Road U, Hudson, WI

Sample ID		VS-1				VS-2				VS-3				VS-4				VS-5						
Date		5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19			
Sample start time		1512	1307	1158	1105	1536	1305	1148	1116	1551	1246	1119	1135	1607	1232	1128	1155	1623	1225	1101	1215			
Sample end time		1518	1314	1207	1114	1544	1312	1156	1126	1559	1258	1126	1145	1614	1240	1138	1206	1630	1233	1108	1227			
		Sub-Slab VRSLs																						
Parameter	CAS	Residential	Large Commercial/Industrial																					
1,1,1-Trichloroethane	71-55-6	170,000	2,200,000		248	415	1060	6.2	632	78.5	2140	72.3	57.0	260	72.1	3.9	149	30.1	456	0.87 J	42.9	74.9	128	<0.56
1,1,2-Trichloroethane	79-00-5	39	490		<0.50	<0.98	<2.0	<1.3	<0.47	<0.98	<2.0	<0.47	<0.45	<0.98	<2.0	<0.45	<0.46	<0.93	<2.2	<0.45	<0.46	<0.95	<2.1	<0.44
1,1-Dichloroethane	75-34-3	600	7,700		<0.45	<1.5	<1.5	<1.2	<0.42	<1.5	<1.5	<0.44	<0.40	2.5	<1.5	<0.42	1.8	<1.4	4.2	<0.42	<0.41	<1.4	<1.5	<0.40
1,1-Dichloroethene	75-35-4		88,000		<0.55	<1.4	<1.5	<1.5	<0.51	<1.4	<1.5	<0.53	2.0	<1.4	6.2	<0.51	<0.50	3.7	<1.6	<0.51	1.1 J	2.2	3.1	<0.49
1,2-Dichloroethane	107-06-2	37	470		1.8	<0.73	<0.74	<0.82	1.1	<0.73	<0.74	<0.29	<0.27	<0.73	<0.75	<0.28	<0.27	<0.69	<0.80	<0.28	<0.27	<0.70	<0.77	<0.27
Chloroethane	75-00-3	890,000	12,000,000		<0.53	<0.95	<2.4	<1.4	<0.49	<0.95	<2.4	<0.50	<0.47	<0.95	<2.5	<0.49	<0.48	<0.90	<2.6	<0.49	<0.48	<0.92	<2.5	<0.47
Dichlorodifluoromethane	75-71-8	3,300	44,000		2.6	3.6	3.7	2.4 J	2.2	2.8	3.7	1.8	2.0	3.8	4.0	<0.55	2.6	3.5	4.4	<0.55	1.9	3.4	3.7	1.1 J
Tetrachloroethene	127-18-4	1,400	18,000		19.9	69.7	126	8.0	32.5	4.0	118	118	17.8	83.4	21.5	307	38.0	12.3	175	345	23.4	24.3	39.3	769
Trichloroethene	79-01-6	70	880		68.3	161	257	<1.4	71.3	7.2	198	1.2	22.7	249	38.3	<0.47	129	18.5	424	<0.47	34.0	35.8	61.0	<0.46
Trichlorofluoromethane	75-69-4		No Inhal. Tox. Info		2.4	3.2	3.9	3.1 J	2.9	4.2	4.0	3.8	2.2	2.4	3.4	3.9	2.1	2.8	2.9	3.7	2.6	3.5	4.1	4.7
Vinyl chloride	75-01-4	57	2,800		<0.25	<0.46	<0.47	<0.69	<0.24	<0.46	<0.47	<0.24	<0.23	<0.46	<0.48	<0.24	<0.23	<0.44	<0.50	<0.24	<0.23	<0.44	<0.49	<0.23
cis-1,2-Dichloroethene	156-59-2		No Inhal. Tox. Info		<0.44	<1.4	<1.5	<1.2	<0.41	<1.4	<1.5	<0.42	<0.39	5.4	<1.5	<0.41	3.5	<1.4	8.2	<0.41	<0.40	<1.4	<1.5	<0.39
trans-1,2-Dichloroethene	156-60-5		No Inhal. Tox. Info		0.99 J	1.5	3.2	<1.6	1.8	<1.4	2.5	<0.55	<0.51	2.3	<1.5	<0.53	1.6	<1.4	3.9	<0.53	<0.52	<1.4	<1.5	0.77 J

Notes:
 VRSL - vapor risk screening level
 All units in ug/m3 = micrograms per cubic meter
 J = estimated analyte concentration between limit of detection and limit of quantitation
 Analysis by method TO-15
Bold - residential VRSLs exceedances (which are not applicable to this site)
 Leak detection via water dam and shut-in tests - All samples passed leak detection tests prior to sample collection.
 Collection via 1-L Suma canisters with 200 mL per minute flow control
 Communication Testing - NA - no sub-slab depressurization system installed on site.

Table 1 - Summary of Sub-Slab Vapor Analytical Results
Nor-Lake, 891 County Road U, Hudson, WI

Sample ID		VS-6				VS-7				VS-8				VS-9				VS-10						
Date		5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19			
Sample start time		1636	1215	1052	1240	1653	1149	1044	1304	1707	1128	1016	1320	1733	1114	1005	1340	1752	1102	956	1400			
Sample end time		1644	1222	1059	1256	1700	1156	1051	1315	1716	1135	1023	1331	1742	1121	1012	1348	1759	1109	1003	1404			
		Sub-Slab VRSLs																						
Parameter	CAS	Residential	Large Commercial/Industrial																					
1,1,1-Trichloroethane	71-55-6	170,000	2,200,000		16.6	6.1	16.7	90.9	69.4	131	292	<0.53	9.5	<2.0	<2.0	<0.52	5.2	<2.0	3.9	<0.52	2.8	<1.9	2.9	<0.58
1,1,2-Trichloroethane	79-00-5	39	490		<0.46	<0.98	<2.0	<0.42	<0.46	<0.98	<2.1	<0.41	<0.47	<0.98	<2.0	<0.41	<0.43	<0.98	<2.1	<0.41	<0.46	<0.97	<2.0	<0.45
1,1-Dichloroethane	75-34-3	600	7,700		<0.41	<1.5	<1.5	<0.39	<0.41	<1.5	<1.5	<0.38	<0.42	<1.5	<1.5	<0.38	<0.38	<1.5	<1.5	<0.38	<0.41	<1.4	<1.5	<0.42
1,1-Dichloroethene	75-35-4		88,000		1.0 J	1.6	1.9	1.1 J	1.2 J	<1.4	1.8	<0.47	<0.51	<1.4	<1.5	<0.46	<0.47	<1.4	<1.5	<0.46	<0.50	<1.4	<1.5	<0.51
1,2-Dichloroethane	107-06-2	37	470		<0.27	<0.73	<0.75	<0.26	<0.27	<0.73	<0.77	<0.26	<0.28	<0.73	<0.75	<0.25	<0.26	<0.73	<0.77	<0.25	<0.27	<0.72	<0.74	<0.28
Chloroethane	75-00-3	890,000	12,000,000		<0.48	<0.95	<2.5	<0.45	<0.48	<0.95	<2.5	<0.44	<0.49	<0.95	<2.5	<0.44	<0.44	<0.95	<2.5	<0.44	<0.48	<0.93	<2.4	<0.49
Dichlorodifluoromethane	75-71-8	3,300	44,000		2.7	5.8	7.2	8.5	1.7 J	2.6	2.8	0.87 J	2.0	2.5	2.4	2.5	2.3	2.7	2.5	2.6	2.1	2.4	2.5	2.7
Tetrachloroethene	127-18-4	1,400	18,000		21.7	20.2	27.5	75	19.1	30.5	63.8	842	9.8	<1.2	1.8	7.3	6.1	<1.2	9.6	3.2	4.0	<1.2	2.3	1.8
Trichloroethene	79-01-6	70	880		15.8	7.8	13.8	25.1	53.6	90.6	160	<0.43	12.2	<0.97	<1.0	<0.43	5.1	<0.97	1.3	<0.43	2.3	<0.95	1.2	<0.47
Trichlorofluoromethane	75-69-4		No Inhal. Tox. Info		2.9	3.5	4.0	8.6	4.4	5.3	7.5	4.4	1.7 J	<2.0	2.9	5.0	1.9 J	2.3	5.9	2.4	1.5 J	<2.0	<2.1	2.0 J
Vinyl chloride	75-01-4	57	2,800		<0.23	<0.46	<0.48	<0.22	<0.23	<0.46	<0.49	<0.22	<0.24	<0.46	<0.48	<0.21	<0.22	<0.46	<0.49	<0.21	<0.23	<0.45	<0.47	<0.24
cis-1,2-Dichloroethene	156-59-2		No Inhal. Tox. Info		<0.40	<1.4	<1.5	<0.38	<0.40	<1.4	<1.5	<0.37	<0.41	<1.4	<1.5	<0.37	<0.37	<1.4	<1.5	<0.37	<0.40	<1.4	<1.5	<0.41
trans-1,2-Dichloroethene	156-60-5		No Inhal. Tox. Info		<0.52	<1.4	<1.5	1.2 J	0.57 J	<1.4	2.0	3.6	<0.53	<1.4	<1.5	<0.48	<0.49	<1.4	<1.5	<0.48	<0.52	<1.4	<1.5	<0.53

Notes:
 VRSL - vapor risk screening level
 All units in ug/m3 = micrograms per cubic meter
 J = estimated analyte concentration between limit of detection and limit of quantitation
 Analysis by method TO-15
Bold - residential VRSLs exceedances (which are not applicable to this site)
 Leak detection via water dam and shut-in tests - All samples passed leak detection tests
 Collection via 1-L Summa canisters with 200 mL per minute flow control
 Communication Testing - NA - no sub-slab depressurization system installed on site.

Table 2 - Summary of Sub-Slab Vapor Screening Results
 Nor-Lake, 891 County Road U, Hudson, WI

Parameter	VS-1				VS-2				VS-3				VS-4				VS-5			
	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19
Date	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19
PID	21.15	1.05	15.70	12.10	20.33	0.97	57.52	1.24	20.44	1.51	23.64	20.21	23.15	1.40	22.41	18.31	27.46	1.48	16.60	12.46
FID	1.54	10.56	1.61	NS	2.54	13.37	0.88	NS	4.73	8.69	3.61	NS	4.97	7.87	5.68	NS	4.84	8.05	6.41	NS

Parameter	VS-6				VS-7				VS-8				VS-9				VS-10			
	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19
Date	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19	5/15/19	6/13/19	7/2/19	11/21/19
PID	4.01	1.45	7.86	2.08	25.23	1.02	16.30	3.51	5.23	1.36	21.39	23.30	7.82	0.33	25.42	26.61	15.17	1.00	22.78	25.20
FID	7.55	9.61	8.81	NS	5.00	4.89	3.46	NS	2.03	5.39	0.92	NS	1.72	8.57	2.01	NS	1.01	5.67	1.42	NS

Notes:

PID - photoionization detector

FID - flame ionization detector

NS - not sampled

All units in instrument units (parts per million isobutylene equivalent)

Appendix D
Laboratory Analytical Reports

May 21, 2019

Mitchell Banach
Ayres Associates
3433 Oakwood Hills Parkway
Eau Claire, WI 54701

RE: Project: 51-0367.00 NorLake
Pace Project No.: 10475349

Dear Mitchell Banach:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jared Dickinson
jared.dickinson@pacelabs.com
(612)607-1700
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10475349001	VS-1	Air	05/15/19 15:18	05/17/19 11:00
10475349002	VS-2	Air	05/15/19 15:44	05/17/19 11:00
10475349003	VS-3	Air	05/15/19 15:59	05/17/19 11:00
10475349004	VS-4	Air	05/15/19 16:14	05/17/19 11:00
10475349005	VS-5	Air	05/15/19 16:30	05/17/19 11:00
10475349006	VS-6	Air	05/15/19 16:44	05/17/19 11:00
10475349007	VS-7	Air	05/15/19 17:00	05/17/19 11:00
10475349008	VS-8	Air	05/15/19 17:16	05/17/19 11:00
10475349009	VS-9	Air	05/15/19 17:42	05/17/19 11:00
10475349010	VS-10	Air	05/15/19 17:59	05/17/19 11:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10475349001	VS-1	TO-15	MJL	13	PASI-M
10475349002	VS-2	TO-15	MJL	13	PASI-M
10475349003	VS-3	TO-15	MJL	13	PASI-M
10475349004	VS-4	TO-15	MJL	13	PASI-M
10475349005	VS-5	TO-15	MJL	13	PASI-M
10475349006	VS-6	TO-15	MJL	13	PASI-M
10475349007	VS-7	TO-15	MJL	13	PASI-M
10475349008	VS-8	TO-15	MJL	13	PASI-M
10475349009	VS-9	TO-15	MJL	13	PASI-M
10475349010	VS-10	TO-15	MJL	13	PASI-M

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-1 **Lab ID: 10475349001** Collected: 05/15/19 15:18 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.53	ug/m3	1.1	0.53	2.02		05/18/19 22:52	75-00-3	
Dichlorodifluoromethane	2.6	ug/m3	2.0	0.59	2.02		05/18/19 22:52	75-71-8	
1,1-Dichloroethane	<0.45	ug/m3	1.7	0.45	2.02		05/18/19 22:52	75-34-3	
1,2-Dichloroethane	1.8	ug/m3	0.83	0.30	2.02		05/18/19 22:52	107-06-2	
1,1-Dichloroethene	<0.55	ug/m3	1.6	0.55	2.02		05/18/19 22:52	75-35-4	
cis-1,2-Dichloroethene	<0.44	ug/m3	1.6	0.44	2.02		05/18/19 22:52	156-59-2	
trans-1,2-Dichloroethene	0.99J	ug/m3	1.6	0.58	2.02		05/18/19 22:52	156-60-5	
Tetrachloroethene	19.9	ug/m3	1.4	0.63	2.02		05/18/19 22:52	127-18-4	
1,1,1-Trichloroethane	248	ug/m3	2.2	0.62	2.02		05/18/19 22:52	71-55-6	
1,1,2-Trichloroethane	<0.50	ug/m3	1.1	0.50	2.02		05/18/19 22:52	79-00-5	
Trichloroethene	68.3	ug/m3	1.1	0.52	2.02		05/18/19 22:52	79-01-6	
Trichlorofluoromethane	2.4	ug/m3	2.3	0.74	2.02		05/18/19 22:52	75-69-4	
Vinyl chloride	<0.25	ug/m3	0.53	0.25	2.02		05/18/19 22:52	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-2 **Lab ID: 10475349002** Collected: 05/15/19 15:44 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.49	ug/m3	1.0	0.49	1.87		05/18/19 23:23	75-00-3	
Dichlorodifluoromethane	2.2	ug/m3	1.9	0.55	1.87		05/18/19 23:23	75-71-8	
1,1-Dichloroethane	<0.42	ug/m3	1.5	0.42	1.87		05/18/19 23:23	75-34-3	
1,2-Dichloroethane	1.1	ug/m3	0.77	0.28	1.87		05/18/19 23:23	107-06-2	
1,1-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.87		05/18/19 23:23	75-35-4	
cis-1,2-Dichloroethene	<0.41	ug/m3	1.5	0.41	1.87		05/18/19 23:23	156-59-2	
trans-1,2-Dichloroethene	1.8	ug/m3	1.5	0.53	1.87		05/18/19 23:23	156-60-5	
Tetrachloroethene	32.5	ug/m3	1.3	0.59	1.87		05/18/19 23:23	127-18-4	
1,1,1-Trichloroethane	632	ug/m3	20.8	5.8	18.7		05/19/19 11:44	71-55-6	
1,1,2-Trichloroethane	<0.47	ug/m3	1.0	0.47	1.87		05/18/19 23:23	79-00-5	
Trichloroethene	71.3	ug/m3	1.0	0.48	1.87		05/18/19 23:23	79-01-6	
Trichlorofluoromethane	2.9	ug/m3	2.1	0.68	1.87		05/18/19 23:23	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.49	0.24	1.87		05/18/19 23:23	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-3 **Lab ID: 10475349003** Collected: 05/15/19 15:59 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.47	ug/m3	0.96	0.47	1.8		05/18/19 23:53	75-00-3	
Dichlorodifluoromethane	2.0	ug/m3	1.8	0.53	1.8		05/18/19 23:53	75-71-8	
1,1-Dichloroethane	<0.40	ug/m3	1.5	0.40	1.8		05/18/19 23:53	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.74	0.27	1.8		05/18/19 23:53	107-06-2	
1,1-Dichloroethene	2.0	ug/m3	1.5	0.49	1.8		05/18/19 23:53	75-35-4	
cis-1,2-Dichloroethene	<0.39	ug/m3	1.5	0.39	1.8		05/18/19 23:53	156-59-2	
trans-1,2-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.8		05/18/19 23:53	156-60-5	
Tetrachloroethene	17.8	ug/m3	1.2	0.57	1.8		05/18/19 23:53	127-18-4	
1,1,1-Trichloroethane	57.0	ug/m3	2.0	0.56	1.8		05/18/19 23:53	71-55-6	
1,1,2-Trichloroethane	<0.45	ug/m3	1.0	0.45	1.8		05/18/19 23:53	79-00-5	
Trichloroethene	22.7	ug/m3	0.98	0.46	1.8		05/18/19 23:53	79-01-6	
Trichlorofluoromethane	2.2	ug/m3	2.1	0.66	1.8		05/18/19 23:53	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.47	0.23	1.8		05/18/19 23:53	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-4 **Lab ID: 10475349004** Collected: 05/15/19 16:14 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.48	ug/m3	0.98	0.48	1.83		05/19/19 00:23	75-00-3	
Dichlorodifluoromethane	2.6	ug/m3	1.8	0.54	1.83		05/19/19 00:23	75-71-8	
1,1-Dichloroethane	1.8	ug/m3	1.5	0.41	1.83		05/19/19 00:23	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.75	0.27	1.83		05/19/19 00:23	107-06-2	
1,1-Dichloroethene	<0.50	ug/m3	1.5	0.50	1.83		05/19/19 00:23	75-35-4	
cis-1,2-Dichloroethene	3.5	ug/m3	1.5	0.40	1.83		05/19/19 00:23	156-59-2	
trans-1,2-Dichloroethene	1.6	ug/m3	1.5	0.52	1.83		05/19/19 00:23	156-60-5	
Tetrachloroethene	38.0	ug/m3	1.3	0.57	1.83		05/19/19 00:23	127-18-4	
1,1,1-Trichloroethane	149	ug/m3	2.0	0.57	1.83		05/19/19 00:23	71-55-6	
1,1,2-Trichloroethane	<0.46	ug/m3	1.0	0.46	1.83		05/19/19 00:23	79-00-5	
Trichloroethene	129	ug/m3	1.0	0.47	1.83		05/19/19 00:23	79-01-6	
Trichlorofluoromethane	2.1	ug/m3	2.1	0.67	1.83		05/19/19 00:23	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.48	0.23	1.83		05/19/19 00:23	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-5 **Lab ID: 10475349005** Collected: 05/15/19 16:30 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.48	ug/m3	0.98	0.48	1.83		05/19/19 00:54	75-00-3	
Dichlorodifluoromethane	1.9	ug/m3	1.8	0.54	1.83		05/19/19 00:54	75-71-8	
1,1-Dichloroethane	<0.41	ug/m3	1.5	0.41	1.83		05/19/19 00:54	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.75	0.27	1.83		05/19/19 00:54	107-06-2	
1,1-Dichloroethene	1.1J	ug/m3	1.5	0.50	1.83		05/19/19 00:54	75-35-4	
cis-1,2-Dichloroethene	<0.40	ug/m3	1.5	0.40	1.83		05/19/19 00:54	156-59-2	
trans-1,2-Dichloroethene	<0.52	ug/m3	1.5	0.52	1.83		05/19/19 00:54	156-60-5	
Tetrachloroethene	23.4	ug/m3	1.3	0.57	1.83		05/19/19 00:54	127-18-4	
1,1,1-Trichloroethane	42.9	ug/m3	2.0	0.57	1.83		05/19/19 00:54	71-55-6	
1,1,2-Trichloroethane	<0.46	ug/m3	1.0	0.46	1.83		05/19/19 00:54	79-00-5	
Trichloroethene	34.0	ug/m3	1.0	0.47	1.83		05/19/19 00:54	79-01-6	
Trichlorofluoromethane	2.6	ug/m3	2.1	0.67	1.83		05/19/19 00:54	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.48	0.23	1.83		05/19/19 00:54	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-6 **Lab ID: 10475349006** Collected: 05/15/19 16:44 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.48	ug/m3	0.98	0.48	1.83		05/19/19 01:24	75-00-3	
Dichlorodifluoromethane	2.7	ug/m3	1.8	0.54	1.83		05/19/19 01:24	75-71-8	
1,1-Dichloroethane	<0.41	ug/m3	1.5	0.41	1.83		05/19/19 01:24	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.75	0.27	1.83		05/19/19 01:24	107-06-2	
1,1-Dichloroethene	1.0J	ug/m3	1.5	0.50	1.83		05/19/19 01:24	75-35-4	
cis-1,2-Dichloroethene	<0.40	ug/m3	1.5	0.40	1.83		05/19/19 01:24	156-59-2	
trans-1,2-Dichloroethene	<0.52	ug/m3	1.5	0.52	1.83		05/19/19 01:24	156-60-5	
Tetrachloroethene	21.7	ug/m3	1.3	0.57	1.83		05/19/19 01:24	127-18-4	
1,1,1-Trichloroethane	16.6	ug/m3	2.0	0.57	1.83		05/19/19 01:24	71-55-6	
1,1,2-Trichloroethane	<0.46	ug/m3	1.0	0.46	1.83		05/19/19 01:24	79-00-5	
Trichloroethene	15.8	ug/m3	1.0	0.47	1.83		05/19/19 01:24	79-01-6	
Trichlorofluoromethane	2.9	ug/m3	2.1	0.67	1.83		05/19/19 01:24	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.48	0.23	1.83		05/19/19 01:24	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-7 **Lab ID: 10475349007** Collected: 05/15/19 17:00 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.48	ug/m3	0.98	0.48	1.83		05/19/19 01:55	75-00-3	
Dichlorodifluoromethane	1.7J	ug/m3	1.8	0.54	1.83		05/19/19 01:55	75-71-8	
1,1-Dichloroethane	<0.41	ug/m3	1.5	0.41	1.83		05/19/19 01:55	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.75	0.27	1.83		05/19/19 01:55	107-06-2	
1,1-Dichloroethene	1.2J	ug/m3	1.5	0.50	1.83		05/19/19 01:55	75-35-4	
cis-1,2-Dichloroethene	<0.40	ug/m3	1.5	0.40	1.83		05/19/19 01:55	156-59-2	
trans-1,2-Dichloroethene	0.57J	ug/m3	1.5	0.52	1.83		05/19/19 01:55	156-60-5	
Tetrachloroethene	19.1	ug/m3	1.3	0.57	1.83		05/19/19 01:55	127-18-4	
1,1,1-Trichloroethane	69.4	ug/m3	2.0	0.57	1.83		05/19/19 01:55	71-55-6	
1,1,2-Trichloroethane	<0.46	ug/m3	1.0	0.46	1.83		05/19/19 01:55	79-00-5	
Trichloroethene	53.6	ug/m3	1.0	0.47	1.83		05/19/19 01:55	79-01-6	
Trichlorofluoromethane	4.4	ug/m3	2.1	0.67	1.83		05/19/19 01:55	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.48	0.23	1.83		05/19/19 01:55	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-8 **Lab ID: 10475349008** Collected: 05/15/19 17:16 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.49	ug/m3	1.0	0.49	1.87		05/19/19 02:25	75-00-3	
Dichlorodifluoromethane	2.0	ug/m3	1.9	0.55	1.87		05/19/19 02:25	75-71-8	
1,1-Dichloroethane	<0.42	ug/m3	1.5	0.42	1.87		05/19/19 02:25	75-34-3	
1,2-Dichloroethane	<0.28	ug/m3	0.77	0.28	1.87		05/19/19 02:25	107-06-2	
1,1-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.87		05/19/19 02:25	75-35-4	
cis-1,2-Dichloroethene	<0.41	ug/m3	1.5	0.41	1.87		05/19/19 02:25	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/m3	1.5	0.53	1.87		05/19/19 02:25	156-60-5	
Tetrachloroethene	9.8	ug/m3	1.3	0.59	1.87		05/19/19 02:25	127-18-4	
1,1,1-Trichloroethane	9.5	ug/m3	2.1	0.58	1.87		05/19/19 02:25	71-55-6	
1,1,2-Trichloroethane	<0.47	ug/m3	1.0	0.47	1.87		05/19/19 02:25	79-00-5	
Trichloroethene	12.2	ug/m3	1.0	0.48	1.87		05/19/19 02:25	79-01-6	
Trichlorofluoromethane	1.7J	ug/m3	2.1	0.68	1.87		05/19/19 02:25	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.49	0.24	1.87		05/19/19 02:25	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-9 **Lab ID: 10475349009** Collected: 05/15/19 17:42 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.44	ug/m3	0.92	0.44	1.71		05/19/19 02:55	75-00-3	
Dichlorodifluoromethane	2.3	ug/m3	1.7	0.50	1.71		05/19/19 02:55	75-71-8	
1,1-Dichloroethane	<0.38	ug/m3	1.4	0.38	1.71		05/19/19 02:55	75-34-3	
1,2-Dichloroethane	<0.26	ug/m3	0.70	0.26	1.71		05/19/19 02:55	107-06-2	
1,1-Dichloroethene	<0.47	ug/m3	1.4	0.47	1.71		05/19/19 02:55	75-35-4	
cis-1,2-Dichloroethene	<0.37	ug/m3	1.4	0.37	1.71		05/19/19 02:55	156-59-2	
trans-1,2-Dichloroethene	<0.49	ug/m3	1.4	0.49	1.71		05/19/19 02:55	156-60-5	
Tetrachloroethene	6.1	ug/m3	1.2	0.54	1.71		05/19/19 02:55	127-18-4	
1,1,1-Trichloroethane	5.2	ug/m3	1.9	0.53	1.71		05/19/19 02:55	71-55-6	
1,1,2-Trichloroethane	<0.43	ug/m3	0.95	0.43	1.71		05/19/19 02:55	79-00-5	
Trichloroethene	5.1	ug/m3	0.93	0.44	1.71		05/19/19 02:55	79-01-6	
Trichlorofluoromethane	1.9J	ug/m3	1.9	0.63	1.71		05/19/19 02:55	75-69-4	
Vinyl chloride	<0.22	ug/m3	0.44	0.22	1.71		05/19/19 02:55	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Sample: VS-10 **Lab ID: 10475349010** Collected: 05/15/19 17:59 Received: 05/17/19 11:00 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.48	ug/m3	0.98	0.48	1.83		05/19/19 03:26	75-00-3	
Dichlorodifluoromethane	2.1	ug/m3	1.8	0.54	1.83		05/19/19 03:26	75-71-8	
1,1-Dichloroethane	<0.41	ug/m3	1.5	0.41	1.83		05/19/19 03:26	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.75	0.27	1.83		05/19/19 03:26	107-06-2	
1,1-Dichloroethene	<0.50	ug/m3	1.5	0.50	1.83		05/19/19 03:26	75-35-4	
cis-1,2-Dichloroethene	<0.40	ug/m3	1.5	0.40	1.83		05/19/19 03:26	156-59-2	
trans-1,2-Dichloroethene	<0.52	ug/m3	1.5	0.52	1.83		05/19/19 03:26	156-60-5	
Tetrachloroethene	4.0	ug/m3	1.3	0.57	1.83		05/19/19 03:26	127-18-4	
1,1,1-Trichloroethane	2.8	ug/m3	2.0	0.57	1.83		05/19/19 03:26	71-55-6	
1,1,2-Trichloroethane	<0.46	ug/m3	1.0	0.46	1.83		05/19/19 03:26	79-00-5	
Trichloroethene	2.3	ug/m3	1.0	0.47	1.83		05/19/19 03:26	79-01-6	
Trichlorofluoromethane	1.5J	ug/m3	2.1	0.67	1.83		05/19/19 03:26	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.48	0.23	1.83		05/19/19 03:26	75-01-4	

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QUALITY CONTROL DATA

Project: 51-0367.00 NorLake
Pace Project No.: 10475349

QC Batch: 606833 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10475349001, 10475349002, 10475349003, 10475349004, 10475349005, 10475349006, 10475349007, 10475349008, 10475349009, 10475349010

METHOD BLANK: 3280603 Matrix: Air
Associated Lab Samples: 10475349001, 10475349002, 10475349003, 10475349004, 10475349005, 10475349006, 10475349007, 10475349008, 10475349009, 10475349010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.15	0.56	05/18/19 13:24	
1,1,2-Trichloroethane	ug/m3	<0.12	0.28	05/18/19 13:24	
1,1-Dichloroethane	ug/m3	<0.11	0.41	05/18/19 13:24	
1,1-Dichloroethene	ug/m3	<0.14	0.40	05/18/19 13:24	
1,2-Dichloroethane	ug/m3	<0.075	0.21	05/18/19 13:24	
Chloroethane	ug/m3	<0.13	0.27	05/18/19 13:24	
cis-1,2-Dichloroethene	ug/m3	<0.11	0.40	05/18/19 13:24	
Dichlorodifluoromethane	ug/m3	<0.15	0.50	05/18/19 13:24	
Tetrachloroethene	ug/m3	<0.16	0.34	05/18/19 13:24	
trans-1,2-Dichloroethene	ug/m3	<0.14	0.40	05/18/19 13:24	
Trichloroethene	ug/m3	<0.13	0.27	05/18/19 13:24	
Trichlorofluoromethane	ug/m3	<0.18	0.57	05/18/19 13:24	
Vinyl chloride	ug/m3	<0.063	0.13	05/18/19 13:24	

LABORATORY CONTROL SAMPLE: 3280604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	60.3	109	70-130	
1,1,2-Trichloroethane	ug/m3	55.5	61.7	111	70-130	
1,1-Dichloroethane	ug/m3	41.1	45.0	109	70-130	
1,1-Dichloroethene	ug/m3	40.3	43.4	108	70-130	
1,2-Dichloroethane	ug/m3	41.1	45.2	110	70-130	
Chloroethane	ug/m3	26.8	32.3	120	70-130	
cis-1,2-Dichloroethene	ug/m3	40.3	45.3	112	70-130	
Dichlorodifluoromethane	ug/m3	50.3	52.0	103	70-130	
Tetrachloroethene	ug/m3	68.9	70.8	103	70-130	
trans-1,2-Dichloroethene	ug/m3	40.3	42.9	106	70-130	
Trichloroethene	ug/m3	54.6	61.4	112	70-130	
Trichlorofluoromethane	ug/m3	57.1	60.9	107	65-130	
Vinyl chloride	ug/m3	26	29.0	112	70-130	

SAMPLE DUPLICATE: 3280739

Parameter	Units	10475141005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	4.3	3.8	12	25	
1,1,2-Trichloroethane	ug/m3	ND	<0.43		25	
1,1-Dichloroethane	ug/m3	ND	<0.38		25	

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QUALITY CONTROL DATA

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

SAMPLE DUPLICATE: 3280739

Parameter	Units	10475141005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethene	ug/m3	ND	<0.47		25	
1,2-Dichloroethane	ug/m3	1.9	1.9	4	25	
Chloroethane	ug/m3	ND	<0.44		25	
cis-1,2-Dichloroethene	ug/m3	ND	<0.37		25	
Dichlorodifluoromethane	ug/m3	38.6	38.9	1	25	
Tetrachloroethene	ug/m3	4.9	4.6	6	25	
trans-1,2-Dichloroethene	ug/m3	ND	<0.49		25	
Trichloroethene	ug/m3	2.7	2.6	5	25	
Trichlorofluoromethane	ug/m3	ND	2.1		25	
Vinyl chloride	ug/m3	ND	<0.22		25	

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QUALIFIERS

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 51-0367.00 NorLake

Pace Project No.: 10475349

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10475349001	VS-1	TO-15	606833		
10475349002	VS-2	TO-15	606833		
10475349003	VS-3	TO-15	606833		
10475349004	VS-4	TO-15	606833		
10475349005	VS-5	TO-15	606833		
10475349006	VS-6	TO-15	606833		
10475349007	VS-7	TO-15	606833		
10475349008	VS-8	TO-15	606833		
10475349009	VS-9	TO-15	606833		
10475349010	VS-10	TO-15	606833		

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AIR: CHAIN-OF-CUSTODY

The Chain-of-Custody is a LEGAL DOCUMENT. All n

WO#: 10475349
10475349

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		36013	
Company: <u>Ayres Associates</u>		Report To: <u>Mitch Banach</u>		Attention: <u>Same as A</u>		Program	
Address: <u>3433 Oakwood Hills Pkwy</u> <u>Fau Claire, WI 54701</u>		Copy To: <u>ald@ayresassociates.com</u>		Company Name: <u>Same as A</u>		<input type="checkbox"/> UST <input type="checkbox"/> Superfund <input type="checkbox"/> Emissions <input type="checkbox"/> Clean Air Act <input type="checkbox"/> Voluntary Clean Up <input type="checkbox"/> Dry Clean <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Email To: <u>banachm@ayresassociates.com</u>		Purchase Order No.:		Address:		Reporting Units	
Phone: <u>715 831 7659</u> Fax:		Project Name: <u>Nor Lake</u>		Pace Quote Reference:		Location of Sampling by State <u>WI</u> ug/m ³ mg/m ³ PPBV PPMV Other	
Requested Due Date/TAT:		Project Number: <u>SI-0367.00</u>		Pace Project Manager/Sales Rep.		Report Level I. II. III. IV. Other	
				Pace Profile #: <u>39395</u>			

ITEM #	Section D Required Client Information		MEDIA CODE	PID Reading (Client only)	COLLECTED				Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method:								Pace Lab ID		
	AIR SAMPLE ID				COMPOSITE START		Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)					Summa Can Number	Flow Control Number	PM10	SC - Packed Gas (%)	TO-3 BTX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs		TO-15 Short List BTX	TO-15 Short List Chlorinated
	Sample IDs MUST BE UNIQUE	Valid Media Codes			DATE	TIME																	
1	VS-1	ILC	5/15/19	1512	5/15/19	1518	27.5	4.0	1333	1559													
2	VS-2			1536		1544	28.0	3.5	2869	0836										X	001		
3	VS-3			1551		1559	29.0	3.0	3068	1136											002		
4	VS-4			1607		1614	28.5	3.0	2876	1587											003		
5	VS-5			1623		1630	29.5	2.5	3065	0618											004		
6	VS-6			1636		1644	28.5	2.5	2262	1003											005		
7	VS-7			1653		1700	29.0	3.0	2650	1507											006		
8	VS-8			1707		1716	29.5	4.0	3298	1659											007		
9	VS-9			1753		1742	29.0	2.0	3165	0832											008		
10	VS-10	ILC	5/15/19	1752	5/15/19	1759	31.0	3.0	2482	1857										X	009		
11																					010		
12																							

Comments: See attached list of analytes for TO-15

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS				
<u>[Signature]</u>	5/16/19	9:00	<u>[Signature]</u>	5/17/19	11:00	AMIS	Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mitch Banach

SIGNATURE of SAMPLER: [Signature] DATE Signed (MM/DD/YY) 05/16/2019

Temp in °C

Received on Ice

Custody Sealed Cooler

Samples Intact

ORIGINAL

Air Sample Condition Upon Receipt Client Name: Ayres Associates Project #: **WO#: 10475349**
 Courier: Fed Ex UPS USPS Client
 Pace Speedee Commercial See Exception
 Tracking Number: 4545 9912 0664

PM: JDD Due Date: 05/24/19
 CLIENT: AYRES ASSOC.

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Packing Material: Bubble Wrap Bubble Bags Foam None Tin Can Other: _____ Temp Blank rec: Yes No
 Temp. (TO17 and TO13 samples only) (°C): _____ Corrected Temp (°C): _____ Thermometer Used: N/A G87A9170600254
 G87A9155100842
 Temp should be above freezing to 6°C Correction Factor: _____ Date & Initials of Person Examining Contents: KAC 5/17/19
 Type of ice Received Blue Wet None

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Media: <u>Air Can</u> Airbag Filter TDT Passive		11. Individually Certified Cans Y <input checked="" type="checkbox"/> N (list which samples)
Is sufficient information available to reconcile samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
Do cans need to be pressurized (3C and ASTM 1946 DO NOT PRESSURIZE)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13.

Samples Received: _____ Pressure Gauge # 10AIR34 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
VS-1	PACE 1333	FC 1559	-5	+10	VS-9	PACE 3165	FC 0832	-0.5	+10
VS-2	PACE 2869	FC 0836	-3	+10	VS-10	PACE 2482	FC 1852	-2.5	+10
VS-3	PACE 3068	FC 1136	-2	+10			(FC 1857)		
VS-4	PACE 2876	FC 1587	-2.5	+10			KAC 5/17/19		
VS-5	PACE 3065	FC 0618	-2.5	+10					
VS-6	PACE 2262	FC 1003	-2.5	+10					
VS-7	PACE 2650	FC 1507	-2.5	+10					
VS-8	PACE 3298	FC 1659	-0.5	+10					

CLIENT NOTIFICATION/RESOLUTION -3 KAC 5/17/19 Field Data Required? Yes No
 Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

Project Manager Review: [Signature] Date: 5/17/19
 Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

June 26, 2019

Mitchell Banach
Ayres Associates
3433 Oakwood Hills Parkway
Eau Claire, WI 54701

RE: Project: 51-0367.00 Nor-Lake
Pace Project No.: 10479256

Dear Mitchell Banach:

Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jared Dickinson
jared.dickinson@pacelabs.com
(612)607-1700
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10479256001	VS-1	Air	06/13/19 13:14	06/14/19 11:20
10479256002	VS-2	Air	06/13/19 13:12	06/14/19 11:20
10479256003	VS-3	Air	06/13/19 12:58	06/14/19 11:20
10479256004	VS-4	Air	06/13/19 12:40	06/14/19 11:20
10479256005	VS-5	Air	06/13/19 12:33	06/14/19 11:20
10479256006	VS-6	Air	06/13/19 12:22	06/14/19 11:20
10479256007	VS-7	Air	06/13/19 11:56	06/14/19 11:20
10479256008	VS-8	Air	06/13/19 11:35	06/14/19 11:20
10479256009	VS-9	Air	06/13/19 11:21	06/14/19 11:20
10479256010	VS-10	Air	06/13/19 11:09	06/14/19 11:20

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SAMPLE ANALYTE COUNT

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10479256001	VS-1	TO-15	AFV	13	PASI-M
10479256002	VS-2	TO-15	MLS	13	PASI-M
10479256003	VS-3	TO-15	AFV	13	PASI-M
10479256004	VS-4	TO-15	AFV	13	PASI-M
10479256005	VS-5	TO-15	AFV	13	PASI-M
10479256006	VS-6	TO-15	AFV	13	PASI-M
10479256007	VS-7	TO-15	AFV	13	PASI-M
10479256008	VS-8	TO-15	AFV	13	PASI-M
10479256009	VS-9	TO-15	AFV	13	PASI-M
10479256010	VS-10	TO-15	AFV	13	PASI-M

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-1 **Lab ID: 10479256001** Collected: 06/13/19 13:14 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 17:34	75-00-3	
Dichlorodifluoromethane	3.6	ug/m3	1.8	0.52	1.77		06/23/19 17:34	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/23/19 17:34	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 17:34	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/23/19 17:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/23/19 17:34	156-59-2	
trans-1,2-Dichloroethene	1.5	ug/m3	1.4	0.50	1.77		06/23/19 17:34	156-60-5	
Tetrachloroethene	69.7	ug/m3	1.2	0.56	1.77		06/23/19 17:34	127-18-4	
1,1,1-Trichloroethane	415	ug/m3	61.7	17.2	55.58		06/24/19 11:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 17:34	79-00-5	
Trichloroethene	161	ug/m3	0.97	0.45	1.77		06/23/19 17:34	79-01-6	
Trichlorofluoromethane	3.2	ug/m3	2.0	0.65	1.77		06/23/19 17:34	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 17:34	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-2 **Lab ID: 10479256002** Collected: 06/13/19 13:12 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/24/19 12:04	75-00-3	
Dichlorodifluoromethane	2.8	ug/m3	1.8	0.52	1.77		06/24/19 12:04	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/24/19 12:04	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/24/19 12:04	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/24/19 12:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/24/19 12:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.77		06/24/19 12:04	156-60-5	
Tetrachloroethene	4.0	ug/m3	1.2	0.56	1.77		06/24/19 12:04	127-18-4	
1,1,1-Trichloroethane	78.5	ug/m3	2.0	0.55	1.77		06/24/19 12:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/24/19 12:04	79-00-5	
Trichloroethene	7.2	ug/m3	0.97	0.45	1.77		06/24/19 12:04	79-01-6	
Trichlorofluoromethane	4.2	ug/m3	2.0	0.65	1.77		06/24/19 12:04	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/24/19 12:04	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-3 **Lab ID: 10479256003** Collected: 06/13/19 12:58 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 18:34	75-00-3	
Dichlorodifluoromethane	3.8	ug/m3	1.8	0.52	1.77		06/23/19 18:34	75-71-8	
1,1-Dichloroethane	2.5	ug/m3	1.5	0.40	1.77		06/23/19 18:34	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 18:34	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/23/19 18:34	75-35-4	
cis-1,2-Dichloroethene	5.4	ug/m3	1.4	0.39	1.77		06/23/19 18:34	156-59-2	
trans-1,2-Dichloroethene	2.3	ug/m3	1.4	0.50	1.77		06/23/19 18:34	156-60-5	
Tetrachloroethene	83.4	ug/m3	1.2	0.56	1.77		06/23/19 18:34	127-18-4	
1,1,1-Trichloroethane	260	ug/m3	2.0	0.55	1.77		06/23/19 18:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 18:34	79-00-5	
Trichloroethene	249	ug/m3	0.97	0.45	1.77		06/23/19 18:34	79-01-6	
Trichlorofluoromethane	2.4	ug/m3	2.0	0.65	1.77		06/23/19 18:34	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 18:34	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-4 **Lab ID: 10479256004** Collected: 06/13/19 12:40 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.90	0.44	1.68		06/23/19 19:35	75-00-3	
Dichlorodifluoromethane	3.5	ug/m3	1.7	0.49	1.68		06/23/19 19:35	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.4	0.38	1.68		06/23/19 19:35	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.69	0.25	1.68		06/23/19 19:35	107-06-2	
1,1-Dichloroethene	3.7	ug/m3	1.4	0.46	1.68		06/23/19 19:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.37	1.68		06/23/19 19:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.48	1.68		06/23/19 19:35	156-60-5	
Tetrachloroethene	12.3	ug/m3	1.2	0.53	1.68		06/23/19 19:35	127-18-4	
1,1,1-Trichloroethane	30.1	ug/m3	1.9	0.52	1.68		06/23/19 19:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.93	0.42	1.68		06/23/19 19:35	79-00-5	
Trichloroethene	18.5	ug/m3	0.92	0.43	1.68		06/23/19 19:35	79-01-6	
Trichlorofluoromethane	2.8	ug/m3	1.9	0.61	1.68		06/23/19 19:35	75-69-4	
Vinyl chloride	ND	ug/m3	0.44	0.21	1.68		06/23/19 19:35	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-5 **Lab ID: 10479256005** Collected: 06/13/19 12:33 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.92	0.44	1.71		06/23/19 20:06	75-00-3	
Dichlorodifluoromethane	3.4	ug/m3	1.7	0.50	1.71		06/23/19 20:06	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.4	0.38	1.71		06/23/19 20:06	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.70	0.26	1.71		06/23/19 20:06	107-06-2	
1,1-Dichloroethene	2.2	ug/m3	1.4	0.47	1.71		06/23/19 20:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.37	1.71		06/23/19 20:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.49	1.71		06/23/19 20:06	156-60-5	
Tetrachloroethene	24.3	ug/m3	1.2	0.54	1.71		06/23/19 20:06	127-18-4	
1,1,1-Trichloroethane	74.9	ug/m3	1.9	0.53	1.71		06/23/19 20:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.95	0.43	1.71		06/23/19 20:06	79-00-5	
Trichloroethene	35.8	ug/m3	0.93	0.44	1.71		06/23/19 20:06	79-01-6	
Trichlorofluoromethane	3.5	ug/m3	1.9	0.63	1.71		06/23/19 20:06	75-69-4	
Vinyl chloride	ND	ug/m3	0.44	0.22	1.71		06/23/19 20:06	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-6 **Lab ID: 10479256006** Collected: 06/13/19 12:22 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 20:36	75-00-3	
Dichlorodifluoromethane	5.8	ug/m3	1.8	0.52	1.77		06/23/19 20:36	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/23/19 20:36	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 20:36	107-06-2	
1,1-Dichloroethene	1.6	ug/m3	1.4	0.48	1.77		06/23/19 20:36	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/23/19 20:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.77		06/23/19 20:36	156-60-5	
Tetrachloroethene	20.2	ug/m3	1.2	0.56	1.77		06/23/19 20:36	127-18-4	
1,1,1-Trichloroethane	6.1	ug/m3	2.0	0.55	1.77		06/23/19 20:36	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 20:36	79-00-5	
Trichloroethene	7.8	ug/m3	0.97	0.45	1.77		06/23/19 20:36	79-01-6	
Trichlorofluoromethane	3.5	ug/m3	2.0	0.65	1.77		06/23/19 20:36	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 20:36	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-7 **Lab ID: 10479256007** Collected: 06/13/19 11:56 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 21:06	75-00-3	
Dichlorodifluoromethane	2.6	ug/m3	1.8	0.52	1.77		06/23/19 21:06	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/23/19 21:06	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 21:06	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/23/19 21:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/23/19 21:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.77		06/23/19 21:06	156-60-5	
Tetrachloroethene	30.5	ug/m3	1.2	0.56	1.77		06/23/19 21:06	127-18-4	
1,1,1-Trichloroethane	131	ug/m3	2.0	0.55	1.77		06/23/19 21:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 21:06	79-00-5	
Trichloroethene	90.6	ug/m3	0.97	0.45	1.77		06/23/19 21:06	79-01-6	
Trichlorofluoromethane	5.3	ug/m3	2.0	0.65	1.77		06/23/19 21:06	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 21:06	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-8 **Lab ID: 10479256008** Collected: 06/13/19 11:35 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 21:36	75-00-3	
Dichlorodifluoromethane	2.5	ug/m3	1.8	0.52	1.77		06/23/19 21:36	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/23/19 21:36	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 21:36	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/23/19 21:36	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/23/19 21:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.77		06/23/19 21:36	156-60-5	
Tetrachloroethene	ND	ug/m3	1.2	0.56	1.77		06/23/19 21:36	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	2.0	0.55	1.77		06/23/19 21:36	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 21:36	79-00-5	
Trichloroethene	ND	ug/m3	0.97	0.45	1.77		06/23/19 21:36	79-01-6	
Trichlorofluoromethane	ND	ug/m3	2.0	0.65	1.77		06/23/19 21:36	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 21:36	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-9 **Lab ID: 10479256009** Collected: 06/13/19 11:21 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.95	0.46	1.77		06/23/19 22:07	75-00-3	
Dichlorodifluoromethane	2.7	ug/m3	1.8	0.52	1.77		06/23/19 22:07	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.77		06/23/19 22:07	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.73	0.27	1.77		06/23/19 22:07	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.77		06/23/19 22:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.39	1.77		06/23/19 22:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.77		06/23/19 22:07	156-60-5	
Tetrachloroethene	ND	ug/m3	1.2	0.56	1.77		06/23/19 22:07	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	2.0	0.55	1.77		06/23/19 22:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.98	0.44	1.77		06/23/19 22:07	79-00-5	
Trichloroethene	ND	ug/m3	0.97	0.45	1.77		06/23/19 22:07	79-01-6	
Trichlorofluoromethane	2.3	ug/m3	2.0	0.65	1.77		06/23/19 22:07	75-69-4	
Vinyl chloride	ND	ug/m3	0.46	0.22	1.77		06/23/19 22:07	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Sample: VS-10 **Lab ID: 10479256010** Collected: 06/13/19 11:09 Received: 06/14/19 11:20 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	0.93	0.45	1.74		06/23/19 22:37	75-00-3	
Dichlorodifluoromethane	2.4	ug/m3	1.8	0.51	1.74		06/23/19 22:37	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.4	0.39	1.74		06/23/19 22:37	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.72	0.26	1.74		06/23/19 22:37	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.4	0.48	1.74		06/23/19 22:37	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.4	0.38	1.74		06/23/19 22:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.4	0.50	1.74		06/23/19 22:37	156-60-5	
Tetrachloroethene	ND	ug/m3	1.2	0.55	1.74		06/23/19 22:37	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	1.9	0.54	1.74		06/23/19 22:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	0.97	0.44	1.74		06/23/19 22:37	79-00-5	
Trichloroethene	ND	ug/m3	0.95	0.45	1.74		06/23/19 22:37	79-01-6	
Trichlorofluoromethane	ND	ug/m3	2.0	0.64	1.74		06/23/19 22:37	75-69-4	
Vinyl chloride	ND	ug/m3	0.45	0.22	1.74		06/23/19 22:37	75-01-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

QC Batch:	614941	Analysis Method:	TO-15
QC Batch Method:	TO-15	Analysis Description:	TO15 MSV AIR Low Level
Associated Lab Samples:	10479256001, 10479256003, 10479256004, 10479256005, 10479256006, 10479256007, 10479256008, 10479256009, 10479256010		

METHOD BLANK:	3322691	Matrix:	Air
Associated Lab Samples:	10479256001, 10479256003, 10479256004, 10479256005, 10479256006, 10479256007, 10479256008, 10479256009, 10479256010		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	0.56	06/23/19 16:31	
1,1,2-Trichloroethane	ug/m3	ND	0.28	06/23/19 16:31	
1,1-Dichloroethane	ug/m3	ND	0.41	06/23/19 16:31	
1,1-Dichloroethene	ug/m3	ND	0.40	06/23/19 16:31	
1,2-Dichloroethane	ug/m3	ND	0.21	06/23/19 16:31	
Chloroethane	ug/m3	ND	0.27	06/23/19 16:31	
cis-1,2-Dichloroethene	ug/m3	ND	0.40	06/23/19 16:31	
Dichlorodifluoromethane	ug/m3	ND	0.50	06/23/19 16:31	
Tetrachloroethene	ug/m3	ND	0.34	06/23/19 16:31	
trans-1,2-Dichloroethene	ug/m3	ND	0.40	06/23/19 16:31	
Trichloroethene	ug/m3	ND	0.27	06/23/19 16:31	
Trichlorofluoromethane	ug/m3	ND	0.57	06/23/19 16:31	
Vinyl chloride	ug/m3	ND	0.13	06/23/19 16:31	

LABORATORY CONTROL SAMPLE: 3322692

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	56.6	54.6	97	70-130	
1,1,2-Trichloroethane	ug/m3	58.2	60.5	104	70-130	
1,1-Dichloroethane	ug/m3	42.4	40.3	95	70-130	
1,1-Dichloroethene	ug/m3	43.5	39.3	90	70-130	
1,2-Dichloroethane	ug/m3	42.8	40.9	96	70-130	
Chloroethane	ug/m3	26.8	29.0	108	70-130	
cis-1,2-Dichloroethene	ug/m3	41.9	40.7	97	70-130	
Dichlorodifluoromethane	ug/m3	52.8	47.9	91	70-130	
Tetrachloroethene	ug/m3	70.3	68.1	97	70-130	
trans-1,2-Dichloroethene	ug/m3	41.5	40.4	97	70-130	
Trichloroethene	ug/m3	56.3	57.0	101	70-130	
Trichlorofluoromethane	ug/m3	58.8	53.1	90	65-130	
Vinyl chloride	ug/m3	28.1	26.2	93	70-130	

SAMPLE DUPLICATE: 3322847

Parameter	Units	10479256001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	415	379	9	25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

SAMPLE DUPLICATE: 3322847

Parameter	Units	10479256001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	3.6	4.0	10	25	
Tetrachloroethene	ug/m3	69.7	72.4	4	25	
trans-1,2-Dichloroethene	ug/m3	1.5	1.7	9	25	
Trichloroethene	ug/m3	161	167	4	25	
Trichlorofluoromethane	ug/m3	3.2	3.3	2	25	
Vinyl chloride	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 3322848

Parameter	Units	10479256003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	260	277	6	25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	2.5	2.8	10	25	
1,1-Dichloroethene	ug/m3	ND	.7J		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
cis-1,2-Dichloroethene	ug/m3	5.4	5.6	3	25	
Dichlorodifluoromethane	ug/m3	3.8	4.2	10	25	
Tetrachloroethene	ug/m3	83.4	85.9	3	25	
trans-1,2-Dichloroethene	ug/m3	2.3	2.8	22	25	
Trichloroethene	ug/m3	249	260	5	25	
Trichlorofluoromethane	ug/m3	2.4	2.6	8	25	
Vinyl chloride	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 51-0367.00 Nor-Lake
Pace Project No.: 10479256

QC Batch: 615001 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10479256002

METHOD BLANK: 3322868 Matrix: Air
Associated Lab Samples: 10479256002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	06/24/19 10:36	
1,1,2-Trichloroethane	ug/m3	ND	0.56	06/24/19 10:36	
1,1-Dichloroethane	ug/m3	ND	0.82	06/24/19 10:36	
1,1-Dichloroethene	ug/m3	ND	0.81	06/24/19 10:36	
1,2-Dichloroethane	ug/m3	ND	0.41	06/24/19 10:36	
Chloroethane	ug/m3	ND	0.54	06/24/19 10:36	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	06/24/19 10:36	
Dichlorodifluoromethane	ug/m3	ND	1.0	06/24/19 10:36	
Tetrachloroethene	ug/m3	ND	0.69	06/24/19 10:36	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	06/24/19 10:36	
Trichloroethene	ug/m3	ND	0.55	06/24/19 10:36	
Trichlorofluoromethane	ug/m3	ND	1.1	06/24/19 10:36	
Vinyl chloride	ug/m3	ND	0.26	06/24/19 10:36	

LABORATORY CONTROL SAMPLE: 3322869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	59.2	107	70-130	
1,1,2-Trichloroethane	ug/m3	55.5	65.2	118	70-130	
1,1-Dichloroethane	ug/m3	41.1	44.1	107	70-130	
1,1-Dichloroethene	ug/m3	40.3	43.4	108	70-130	
1,2-Dichloroethane	ug/m3	41.1	44.6	108	70-130	
Chloroethane	ug/m3	26.8	33.8	126	70-130	
cis-1,2-Dichloroethene	ug/m3	40.3	43.9	109	70-130	
Dichlorodifluoromethane	ug/m3	50.3	52.6	105	70-130	
Tetrachloroethene	ug/m3	68.9	71.6	104	70-130	
trans-1,2-Dichloroethene	ug/m3	40.3	44.5	111	70-130	
Trichloroethene	ug/m3	54.6	59.2	108	70-130	
Trichlorofluoromethane	ug/m3	57.1	56.8	99	65-130	
Vinyl chloride	ug/m3	26	29.7	114	70-130	

SAMPLE DUPLICATE: 3324350

Parameter	Units	10479268001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.42	ND		25	
1,1,2-Trichloroethane	ug/m3	<0.34	ND		25	
1,1-Dichloroethane	ug/m3	<0.31	ND		25	
1,1-Dichloroethene	ug/m3	<0.37	ND		25	

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QUALITY CONTROL DATA

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

SAMPLE DUPLICATE: 3324350

Parameter	Units	10479268001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/m3	<0.20	ND		25	
Chloroethane	ug/m3	<0.35	ND		25	
cis-1,2-Dichloroethene	ug/m3	<0.30	ND		25	
Dichlorodifluoromethane	ug/m3	22.4	25.4	13	25	
Tetrachloroethene	ug/m3	3570	3710	4	25	
trans-1,2-Dichloroethene	ug/m3	<0.39	ND		25	
Trichloroethene	ug/m3	13.6	14.9	9	25	
Trichlorofluoromethane	ug/m3	1.8	1.9	5	25	
Vinyl chloride	ug/m3	<0.17	ND		25	

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QUALIFIERS

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 51-0367.00 Nor-Lake

Pace Project No.: 10479256

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10479256001	VS-1	TO-15	614941		
10479256002	VS-2	TO-15	615001		
10479256003	VS-3	TO-15	614941		
10479256004	VS-4	TO-15	614941		
10479256005	VS-5	TO-15	614941		
10479256006	VS-6	TO-15	614941		
10479256007	VS-7	TO-15	614941		
10479256008	VS-8	TO-15	614941		
10479256009	VS-9	TO-15	614941		
10479256010	VS-10	TO-15	614941		

REPORT OF LABORATORY ANALYSIS

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AIR: CHAIN-OF-CUSTODY /

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant

WO#: 10479256



38512

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: <u>Ayres Associates</u>	Report To: <u>Same</u>	Attention: <u>Same as A</u>
Address: <u>3433 Oakwood Hills Parkway Fau Claire, WI 54701</u>	Copy To: <u>aldrian@ayresassociates.com</u>	Company Name: <u>Same as A</u>
Email To: <u>banach@ayresassociates.com</u>	Purchase Order No.:	Address:
Phone: <u>715 734 7659</u> Fax:	Project Name: <u>Nor-Lake</u>	Pace Quote Reference:
Requested Due Date/TAT:	Project Number: <u>SI-0367.00</u>	Pace Project Manager/Sales Rep.
		Pace Profile #: <u>39395 #2</u>

Program

UST Superfund Emissions Clean Air Act

Voluntary Clean Up Dry Clean RCRA Other

Location of Sampling by State: WI

Reporting Units
 ug/m³ mg/m³
 PPBV PPMV
 Other

Report Level: II III IV Other

ITEM #	'Section D Required Client Information AIR SAMPLE ID Sample IDs MUST BE UNIQUE	Valid Media Codes MEDIA CODE	MEDIA CODE	PID Reading (Client only)	COLLECTED				Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method:	Pace Lab ID
					COMPOSITE START		COMPOSITE - END/GRAB							
					DATE	TIME	DATE	TIME						
1	VS-1	ILC			6/13/19	1307	6/13/19	1314	30	3	2422	0977		
2	VS-2					1305		1312	29.5	3	2210	1661		001
3	VS-3					1246		1258	28.5	3	2558	1592		002
4	VS-4					1232		1240	29.5	15	1334	1235		003
5	VS-5					1225		1233	30	1.5	3251	1128		004
6	VS-6					1215		1222	28	3	2568	0965		005
7	VS-7					1149		1156	29.5	3	2791	1190		006
8	VS-8					1125		1135	29.5	3.5	2283	1633		007
9	VS-9					1114		1121	28.5	3	3210	0773		008
10	VS-10	ILC			6/13/19	1102	6/13/19	1109	28	3	3224	1585		009
11														010
12														

Comments:
Same analyte list as
Pace project # 10475349

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS				
<u>Mitchell Banach</u>	6/13/19	15:36	<u>[Signature]</u>	06/14/19	1120		Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Mitchell Banach

SIGNATURE of SAMPLER: [Signature] DATE Signed (MM/DD/YY): 06/13/19

Temp in °C

Received on Ice

Custody Sealed Cooler

Samples Intact

ORIGINAL

Air Sample Condition Upon Receipt Client Name: Ayres Associates Project #: _____

WO# : 10479256
 PM: JDD Due Date: 06/21/19
 CLIENT: AYRES ASSOC.

Courier: Fed Ex UPS USPS Client
 Pace Speedee Commercial See Exception

Tracking Number: 1083 02 77 8950 18940

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Tin Can Other: _____ Temp Blank rec: Yes No

Temp. (TO17 and TO13 samples only) (°C): _____ Corrected Temp (°C): _____ Thermometer Used: G87A9170600254 G87A9155100842

Temp should be above freezing to 6°C Correction Factor: _____ Date & Initials of Person Examining Contents: 06/14/19 JS

Type of ice Received Blue Wet None

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Media: <u>Air Can</u> Airbag Filter TDT Passive		11. Individually Certified Cans Y <u>N</u> (list which samples)
Is sufficient information available to reconcile samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
Do cans need to be pressurized (3C and ASTM 1946 DO NOT PRESSURIZE)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13.

Samples Received: _____ Pressure Gauge # 10AIR34 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
1	2422	0977	-1.5	+10.0	9	3210	0773	-1.5	+10.0
2	2210	1661	"	"	10	3224	1585	-1.0	"
3	2558	1592	"	"					
4	1334	1235	0.0	"					
5	3251	1128	-0.5	"					
6	2568	0965	-1.5	"					
7	2791	1190	"	"					
8	2283	1633	"	"					

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____

Date: 6/14/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

July 12, 2019

Mitchell Banach
Ayres Associates
3433 Oakwood Hills Parkway
Eau Claire, WI 54701

RE: Project: 51-0367.00 Nor Lake
Pace Project No.: 10481997

Dear Mitchell Banach:

Enclosed are the analytical results for sample(s) received by the laboratory on July 03, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jared Dickinson
jared.dickinson@pacelabs.com
(612)607-1700
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10481997001	VS-1	Air	07/02/19 12:07	07/03/19 10:30
10481997002	VS-2	Air	07/02/19 11:56	07/03/19 10:30
10481997003	VS-3	Air	07/02/19 11:26	07/03/19 10:30
10481997004	VS-4	Air	07/02/19 11:38	07/03/19 10:30
10481997005	VS-5	Air	07/02/19 11:08	07/03/19 10:30
10481997006	VS-6	Air	07/02/19 10:59	07/03/19 10:30
10481997007	VS-7	Air	07/02/19 10:51	07/03/19 10:30
10481997008	VS-8	Air	07/02/19 10:23	07/03/19 10:30
10481997009	VS-9	Air	07/02/19 10:12	07/03/19 10:30
10481997010	VS-10	Air	07/02/19 10:03	07/03/19 10:30

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SAMPLE ANALYTE COUNT

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10481997001	VS-1	TO-15	MG2	13	PASI-M
10481997002	VS-2	TO-15	MG2	13	PASI-M
10481997003	VS-3	TO-15	MG2	13	PASI-M
10481997004	VS-4	TO-15	MG2	13	PASI-M
10481997005	VS-5	TO-15	MG2	13	PASI-M
10481997006	VS-6	TO-15	MG2	13	PASI-M
10481997007	VS-7	TO-15	MG2	13	PASI-M
10481997008	VS-8	TO-15	MG2	13	PASI-M
10481997009	VS-9	TO-15	MG2	13	PASI-M
10481997010	VS-10	TO-15	MG2	13	PASI-M

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-1 **Lab ID: 10481997001** Collected: 07/02/19 12:07 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.4	0.47	1.8		07/11/19 23:48	75-00-3	
Dichlorodifluoromethane	3.7	ug/m3	1.8	0.53	1.8		07/11/19 23:48	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.8		07/11/19 23:48	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.74	0.27	1.8		07/11/19 23:48	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.5	0.49	1.8		07/11/19 23:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.39	1.8		07/11/19 23:48	156-59-2	
trans-1,2-Dichloroethene	3.2	ug/m3	1.5	0.51	1.8		07/11/19 23:48	156-60-5	
Tetrachloroethene	126	ug/m3	1.2	0.57	1.8		07/11/19 23:48	127-18-4	
1,1,1-Trichloroethane	1060	ug/m3	40.0	11.1	36		07/12/19 11:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.45	1.8		07/11/19 23:48	79-00-5	
Trichloroethene	257	ug/m3	0.98	0.46	1.8		07/11/19 23:48	79-01-6	
Trichlorofluoromethane	3.9	ug/m3	2.1	0.66	1.8		07/11/19 23:48	75-69-4	
Vinyl chloride	ND	ug/m3	0.47	0.23	1.8		07/11/19 23:48	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-2 **Lab ID: 10481997002** Collected: 07/02/19 11:56 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.4	0.47	1.8		07/11/19 23:18	75-00-3	
Dichlorodifluoromethane	3.7	ug/m3	1.8	0.53	1.8		07/11/19 23:18	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.8		07/11/19 23:18	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.74	0.27	1.8		07/11/19 23:18	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.5	0.49	1.8		07/11/19 23:18	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.39	1.8		07/11/19 23:18	156-59-2	
trans-1,2-Dichloroethene	2.5	ug/m3	1.5	0.51	1.8		07/11/19 23:18	156-60-5	
Tetrachloroethene	118	ug/m3	1.2	0.57	1.8		07/11/19 23:18	127-18-4	
1,1,1-Trichloroethane	2140	ug/m3	59.9	16.7	54		07/12/19 12:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.45	1.8		07/11/19 23:18	79-00-5	
Trichloroethene	198	ug/m3	0.98	0.46	1.8		07/11/19 23:18	79-01-6	
Trichlorofluoromethane	4.0	ug/m3	2.1	0.66	1.8		07/11/19 23:18	75-69-4	
Vinyl chloride	ND	ug/m3	0.47	0.23	1.8		07/11/19 23:18	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-3 **Lab ID: 10481997003** Collected: 07/02/19 11:26 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.48	1.83		07/11/19 22:47	75-00-3	
Dichlorodifluoromethane	4.0	ug/m3	1.8	0.54	1.83		07/11/19 22:47	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.41	1.83		07/11/19 22:47	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.75	0.27	1.83		07/11/19 22:47	107-06-2	
1,1-Dichloroethene	6.2	ug/m3	1.5	0.50	1.83		07/11/19 22:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.40	1.83		07/11/19 22:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.52	1.83		07/11/19 22:47	156-60-5	
Tetrachloroethene	21.5	ug/m3	1.3	0.57	1.83		07/11/19 22:47	127-18-4	
1,1,1-Trichloroethane	72.1	ug/m3	2.0	0.57	1.83		07/11/19 22:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.46	1.83		07/11/19 22:47	79-00-5	
Trichloroethene	38.3	ug/m3	1.0	0.47	1.83		07/11/19 22:47	79-01-6	
Trichlorofluoromethane	3.4	ug/m3	2.1	0.67	1.83		07/11/19 22:47	75-69-4	
Vinyl chloride	ND	ug/m3	0.48	0.23	1.83		07/11/19 22:47	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-4 **Lab ID: 10481997004** Collected: 07/02/19 11:38 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.6	0.50	1.94		07/11/19 22:17	75-00-3	
Dichlorodifluoromethane	4.4	ug/m3	2.0	0.57	1.94		07/11/19 22:17	75-71-8	
1,1-Dichloroethane	4.2	ug/m3	1.6	0.44	1.94		07/11/19 22:17	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.80	0.29	1.94		07/11/19 22:17	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.6	0.53	1.94		07/11/19 22:17	75-35-4	
cis-1,2-Dichloroethene	8.2	ug/m3	1.6	0.42	1.94		07/11/19 22:17	156-59-2	
trans-1,2-Dichloroethene	3.9	ug/m3	1.6	0.55	1.94		07/11/19 22:17	156-60-5	
Tetrachloroethene	175	ug/m3	1.3	0.61	1.94		07/11/19 22:17	127-18-4	
1,1,1-Trichloroethane	456	ug/m3	10.8	3.0	9.7		07/12/19 11:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.2	0.48	1.94		07/11/19 22:17	79-00-5	
Trichloroethene	424	ug/m3	5.3	2.5	9.7		07/12/19 11:24	79-01-6	
Trichlorofluoromethane	2.9	ug/m3	2.2	0.71	1.94		07/11/19 22:17	75-69-4	
Vinyl chloride	ND	ug/m3	0.50	0.24	1.94		07/11/19 22:17	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-5 **Lab ID: 10481997005** Collected: 07/02/19 11:08 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.49	1.87		07/11/19 21:47	75-00-3	
Dichlorodifluoromethane	3.7	ug/m3	1.9	0.55	1.87		07/11/19 21:47	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.42	1.87		07/11/19 21:47	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.77	0.28	1.87		07/11/19 21:47	107-06-2	
1,1-Dichloroethene	3.1	ug/m3	1.5	0.51	1.87		07/11/19 21:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.41	1.87		07/11/19 21:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.53	1.87		07/11/19 21:47	156-60-5	
Tetrachloroethene	39.3	ug/m3	1.3	0.59	1.87		07/11/19 21:47	127-18-4	
1,1,1-Trichloroethane	128	ug/m3	2.1	0.58	1.87		07/11/19 21:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.1	0.47	1.87		07/11/19 21:47	79-00-5	
Trichloroethene	61.0	ug/m3	1.0	0.48	1.87		07/11/19 21:47	79-01-6	
Trichlorofluoromethane	4.1	ug/m3	2.1	0.68	1.87		07/11/19 21:47	75-69-4	
Vinyl chloride	ND	ug/m3	0.49	0.24	1.87		07/11/19 21:47	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-6 **Lab ID: 10481997006** Collected: 07/02/19 10:59 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.48	1.83		07/11/19 21:16	75-00-3	
Dichlorodifluoromethane	7.2	ug/m3	1.8	0.54	1.83		07/11/19 21:16	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.41	1.83		07/11/19 21:16	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.75	0.27	1.83		07/11/19 21:16	107-06-2	
1,1-Dichloroethene	1.9	ug/m3	1.5	0.50	1.83		07/11/19 21:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.40	1.83		07/11/19 21:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.52	1.83		07/11/19 21:16	156-60-5	
Tetrachloroethene	27.5	ug/m3	1.3	0.57	1.83		07/11/19 21:16	127-18-4	
1,1,1-Trichloroethane	16.7	ug/m3	2.0	0.57	1.83		07/11/19 21:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.46	1.83		07/11/19 21:16	79-00-5	
Trichloroethene	13.8	ug/m3	1.0	0.47	1.83		07/11/19 21:16	79-01-6	
Trichlorofluoromethane	4.0	ug/m3	2.1	0.67	1.83		07/11/19 21:16	75-69-4	
Vinyl chloride	ND	ug/m3	0.48	0.23	1.83		07/11/19 21:16	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-7 **Lab ID: 10481997007** Collected: 07/02/19 10:51 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.49	1.87		07/11/19 20:46	75-00-3	
Dichlorodifluoromethane	2.8	ug/m3	1.9	0.55	1.87		07/11/19 20:46	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.42	1.87		07/11/19 20:46	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.77	0.28	1.87		07/11/19 20:46	107-06-2	
1,1-Dichloroethene	1.8	ug/m3	1.5	0.51	1.87		07/11/19 20:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.41	1.87		07/11/19 20:46	156-59-2	
trans-1,2-Dichloroethene	2.0	ug/m3	1.5	0.53	1.87		07/11/19 20:46	156-60-5	
Tetrachloroethene	63.8	ug/m3	1.3	0.59	1.87		07/11/19 20:46	127-18-4	
1,1,1-Trichloroethane	292	ug/m3	2.1	0.58	1.87		07/11/19 20:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.1	0.47	1.87		07/11/19 20:46	79-00-5	
Trichloroethene	160	ug/m3	1.0	0.48	1.87		07/11/19 20:46	79-01-6	
Trichlorofluoromethane	7.5	ug/m3	2.1	0.68	1.87		07/11/19 20:46	75-69-4	
Vinyl chloride	ND	ug/m3	0.49	0.24	1.87		07/11/19 20:46	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-8 **Lab ID: 10481997008** Collected: 07/02/19 10:23 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.48	1.83		07/11/19 20:16	75-00-3	
Dichlorodifluoromethane	2.4	ug/m3	1.8	0.54	1.83		07/11/19 20:16	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.41	1.83		07/11/19 20:16	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.75	0.27	1.83		07/11/19 20:16	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.5	0.50	1.83		07/11/19 20:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.40	1.83		07/11/19 20:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.52	1.83		07/11/19 20:16	156-60-5	
Tetrachloroethene	1.8	ug/m3	1.3	0.57	1.83		07/11/19 20:16	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	2.0	0.57	1.83		07/11/19 20:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.46	1.83		07/11/19 20:16	79-00-5	
Trichloroethene	ND	ug/m3	1.0	0.47	1.83		07/11/19 20:16	79-01-6	
Trichlorofluoromethane	2.9	ug/m3	2.1	0.67	1.83		07/11/19 20:16	75-69-4	
Vinyl chloride	ND	ug/m3	0.48	0.23	1.83		07/11/19 20:16	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-9 **Lab ID: 10481997009** Collected: 07/02/19 10:12 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.5	0.49	1.87		07/11/19 19:45	75-00-3	
Dichlorodifluoromethane	2.5	ug/m3	1.9	0.55	1.87		07/11/19 19:45	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.42	1.87		07/11/19 19:45	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.77	0.28	1.87		07/11/19 19:45	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.5	0.51	1.87		07/11/19 19:45	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.41	1.87		07/11/19 19:45	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.53	1.87		07/11/19 19:45	156-60-5	
Tetrachloroethene	9.6	ug/m3	1.3	0.59	1.87		07/11/19 19:45	127-18-4	
1,1,1-Trichloroethane	3.9	ug/m3	2.1	0.58	1.87		07/11/19 19:45	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.1	0.47	1.87		07/11/19 19:45	79-00-5	
Trichloroethene	1.3	ug/m3	1.0	0.48	1.87		07/11/19 19:45	79-01-6	
Trichlorofluoromethane	5.9	ug/m3	2.1	0.68	1.87		07/11/19 19:45	75-69-4	
Vinyl chloride	ND	ug/m3	0.49	0.24	1.87		07/11/19 19:45	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Sample: VS-10 **Lab ID: 10481997010** Collected: 07/02/19 10:03 Received: 07/03/19 10:30 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	ND	ug/m3	2.4	0.47	1.8		07/11/19 19:15	75-00-3	
Dichlorodifluoromethane	2.5	ug/m3	1.8	0.53	1.8		07/11/19 19:15	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.5	0.40	1.8		07/11/19 19:15	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.74	0.27	1.8		07/11/19 19:15	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.5	0.49	1.8		07/11/19 19:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.5	0.39	1.8		07/11/19 19:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.5	0.51	1.8		07/11/19 19:15	156-60-5	
Tetrachloroethene	2.3	ug/m3	1.2	0.57	1.8		07/11/19 19:15	127-18-4	
1,1,1-Trichloroethane	2.9	ug/m3	2.0	0.56	1.8		07/11/19 19:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	2.0	0.45	1.8		07/11/19 19:15	79-00-5	
Trichloroethene	1.2	ug/m3	0.98	0.46	1.8		07/11/19 19:15	79-01-6	
Trichlorofluoromethane	ND	ug/m3	2.1	0.66	1.8		07/11/19 19:15	75-69-4	
Vinyl chloride	ND	ug/m3	0.47	0.23	1.8		07/11/19 19:15	75-01-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

QC Batch: 618914 Analysis Method: TO-15
 QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
 Associated Lab Samples: 10481997001, 10481997002, 10481997003, 10481997004, 10481997005, 10481997006, 10481997007, 10481997008, 10481997009, 10481997010

METHOD BLANK: 3342288 Matrix: Air
 Associated Lab Samples: 10481997001, 10481997002, 10481997003, 10481997004, 10481997005, 10481997006, 10481997007, 10481997008, 10481997009, 10481997010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	07/11/19 09:47	
1,1,2-Trichloroethane	ug/m3	ND	1.1	07/11/19 09:47	
1,1-Dichloroethane	ug/m3	ND	0.82	07/11/19 09:47	
1,1-Dichloroethene	ug/m3	ND	0.81	07/11/19 09:47	
1,2-Dichloroethane	ug/m3	ND	0.41	07/11/19 09:47	
Chloroethane	ug/m3	ND	1.3	07/11/19 09:47	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	07/11/19 09:47	
Dichlorodifluoromethane	ug/m3	ND	1.0	07/11/19 09:47	
Tetrachloroethene	ug/m3	ND	0.69	07/11/19 09:47	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	07/11/19 09:47	
Trichloroethene	ug/m3	ND	0.55	07/11/19 09:47	
Trichlorofluoromethane	ug/m3	ND	1.1	07/11/19 09:47	
Vinyl chloride	ug/m3	ND	0.26	07/11/19 09:47	

LABORATORY CONTROL SAMPLE: 3342289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	55.2	99	70-130	
1,1,2-Trichloroethane	ug/m3	55.5	57.6	104	70-130	
1,1-Dichloroethane	ug/m3	41.1	41.4	101	70-130	
1,1-Dichloroethene	ug/m3	40.3	39.5	98	70-130	
1,2-Dichloroethane	ug/m3	41.1	40.4	98	70-130	
Chloroethane	ug/m3	26.8	25.4	95	70-130	
cis-1,2-Dichloroethene	ug/m3	40.3	41.1	102	70-130	
Dichlorodifluoromethane	ug/m3	50.3	48.3	96	70-130	
Tetrachloroethene	ug/m3	68.9	76.9	111	70-130	
trans-1,2-Dichloroethene	ug/m3	40.3	41.1	102	70-130	
Trichloroethene	ug/m3	54.6	57.1	105	70-130	
Trichlorofluoromethane	ug/m3	57.1	56.4	99	65-130	
Vinyl chloride	ug/m3	26	24.5	94	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 51-0367.00 Nor Lake

Pace Project No.: 10481997

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10481997001	VS-1	TO-15	618914		
10481997002	VS-2	TO-15	618914		
10481997003	VS-3	TO-15	618914		
10481997004	VS-4	TO-15	618914		
10481997005	VS-5	TO-15	618914		
10481997006	VS-6	TO-15	618914		
10481997007	VS-7	TO-15	618914		
10481997008	VS-8	TO-15	618914		
10481997009	VS-9	TO-15	618914		
10481997010	VS-10	TO-15	618914		

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AIR: CHAIN-OF-CUSTODY /

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant

WO#: 10481997



38717

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Program	
Company: <u>Ayres Associates</u>		Report To: <u>Mitchel Baner</u>		Attention: <u>Same</u>		<input type="checkbox"/> UST <input type="checkbox"/> Superfund <input type="checkbox"/> Emissions <input type="checkbox"/> Clean Air Act <input type="checkbox"/> Voluntary Clean Up <input type="checkbox"/> Dry Clean <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Address: <u>3433 Oakwood Hills Plany</u> <u>East Claire, WI 54701</u>		Copy To: <u>Aldrich@ayresassociates.com</u>		Company Name:		Location of Sampling by State: <u>WI</u>	
Email To: <u>baner@ayresassociates.com</u>		Purchase Order No.:		Address:		Reporting Units ug/m ³ <input checked="" type="checkbox"/> mg/m ³ <input type="checkbox"/> PPBV <input type="checkbox"/> PPMV <input type="checkbox"/> Other <input type="checkbox"/>	
Phone: <u>715 831 7659</u> Fax:		Project Name: <u>Nor Lake</u>		Pace Quote Reference:		Report Level: II ___ III ___ IV ___ Other ___	
Requested Due Date/TAT:		Project Number: <u>SI-0367.00</u>		Pace Project Manager/Sales Rep.			
				Pace Profile #: <u>39395 #2</u>			

ITEM #	'Section D Required Client Information AIR SAMPLE ID Sample IDs MUST BE UNIQUE	Valid Media Codes MEDIA CODE	MEDIA	CODE	MEDIA CODE	PID Reading (Client only)	COLLECTED				Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method:								Pace Lab ID				
							COMPOSITE START		COMPOSITE - END/GRAB						PM10	3c - Fixed Gas (%)	TO-3 BTX	TO-14 (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTX	TO-15 Short List Chlorinated		TO-15 Short List (other)			
							DATE	TIME	DATE	TIME																	
1	VS-1	ILC					7/2/19	1158	7/2/19	1207	29.5	2.0	2679	1203											X	C01	
2	VS-2							1148		1156	30.5	2.0	3141	0831													C02
3	VS-3							1119		1126	30.0	2.5	2414	1130													C03
4	VS-4							1128		1138	28.0	3.5	3197	0706													C04
5	VS-5							1101		1108	29.0	3.0	2651	1684													C05
6	VS-6							1052		1059	28.0	3.5	2078	1743													C04
7	VS-7							1044		1051	29.0	3.0	2511	1822													C07
8	VS-8							1016		1023	29.5	3.0	1793	1141													C08
9	VS-9							1005		1012	21.5	3.0	3149	0795													C09
10	VS-10	ILC					7/2/19	956	7/2/19	1003	27.0	2.0	2252	1625											X	C10	

Comments :
See previous two rounds for TO-15 analyte list.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
<u>Mitchel Baner</u>	07/02/19	14:31	<u>CMW PALE</u>	7/2/19	1030	Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Mitchell Baner
 SIGNATURE OF SAMPLER: [Signature] DATE Signed (MM/DD/YY): 07/02/19

ORIGINAL

Air Sample Condition Upon Receipt **Client Name:** AYRES ASSOCIATES **Project #:** _____

Courier: Fed Ex UPS USPS Client
 Pace SpeeDee Commercial See Exception

Tracking Number: 1083 01A8 3272, 3261

WO# : 10481997

PM: JDD **Due Date:** 07/11/19
CLIENT: AYRES ASSOC.

Custody Seal on Cooler/Box Present? Yes No **Seals Intact?** Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Tin Can Other: _____ **Temp Blank rec:** Yes No

Temp. (TO17 and TO13 samples only) (°C): X **Corrected Temp (°C):** X **Thermometer Used:** G87A9170600254
 G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** X **Date & Initials of Person Examining Contents:** 7/5/19 CMY

Type of ice Received Blue Wet None

		Comments:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Media: <u>Air Can</u> Airbag Filter TDT Passive		11. Individually Certified Cans Y <u>N</u> (list which samples)
Is sufficient information available to reconcile samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
Do cans need to be pressurized (3C and ASTM 1946 DO NOT PRESSURIZE)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13.

Samples Received:					Pressure Gauge # <input type="checkbox"/> 10AIR34 <input checked="" type="checkbox"/> 10AIR35				
Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
VS-1	2649	1203	-2	110	-9	3098	0795	-3	"
-2	3141	0831	-2	"	-10	2252	1625	-2	"
-3	2414	1130	-2.5	"					
-4	3197	0706	-4	"					
-5	2651	1684	-3	"					
-6	2078	1743	-2.5	"					
-7	2511	1822	-3	"					
-8	1793	1141	-2.5	"					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** Yes No

Person Contacted: _____ **Date/Time:** _____

Comments/Resolution: _____

Project Manager Review: Anna Asp **Date:** 7/5/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

December 04, 2019

Greg Aldrian
Ayres & Associates
3433 Oakwood Hills Parkway
P.O. Box 1590
Eau Claire, WI 54702

RE: Project: 51-0367.10 NOR LAKE
Pace Project No.: 10500545

Dear Greg Aldrian:

Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jared Dickinson
jared.dickinson@pacelabs.com
(612)607-1700
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Pace Analytical Services Minneapolis

A2LA Certification #: 2926.01	Minnesota Dept of Ag Certification #: via MN 027-053-137
Alabama Certification #: 40770	Minnesota Petrofund Certification #: 1240
Alaska Contaminated Sites Certification #: 17-009	Mississippi Certification #: MN00064
Alaska DW Certification #: MN00064	Missouri Certification #: 10100
Arizona Certification #: AZ0014	Montana Certification #: CERT0092
Arkansas DW Certification #: MN00064	Nebraska Certification #: NE-OS-18-06
Arkansas WW Certification #: 88-0680	Nevada Certification #: MN00064
California Certification #: 2929	New Hampshire Certification #: 2081
CNMI Saipan Certification #: MP0003	New Jersey Certification #: MN002
Colorado Certification #: MN00064	New York Certification #: 11647
Connecticut Certification #: PH-0256	North Carolina DW Certification #: 27700
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137	North Carolina WW Certification #: 530
Florida Certification #: E87605	North Dakota Certification #: R-036
Georgia Certification #: 959	Ohio DW Certification #: 41244
Guam EPA Certification #: MN00064	Ohio VAP Certification #: CL101
Hawaii Certification #: MN00064	Oklahoma Certification #: 9507
Idaho Certification #: MN00064	Oregon Primary Certification #: MN300001
Illinois Certification #: 200011	Oregon Secondary Certification #: MN200001
Indiana Certification #: C-MN-01	Pennsylvania Certification #: 68-00563
Iowa Certification #: 368	Puerto Rico Certification #: MN00064
Kansas Certification #: E-10167	South Carolina Certification #:74003001
Kentucky DW Certification #: 90062	Tennessee Certification #: TN02818
Kentucky WW Certification #: 90062	Texas Certification #: T104704192
Louisiana DEQ Certification #: 03086	Utah Certification #: MN00064
Louisiana DW Certification #: MN00064	Vermont Certification #: VT-027053137
Maine Certification #: MN00064	Virginia Certification #: 460163
Maryland Certification #: 322	Washington Certification #: C486
Massachusetts Certification #: M-MN064	West Virginia DEP Certification #: 382
Massachusetts DWP Certification #: via MN 027-053-137	West Virginia DW Certification #: 9952 C
Michigan Certification #: 9909	Wisconsin Certification #: 999407970
Minnesota Certification #: 027-053-137	Wyoming UST Certification #: via A2LA 2926.01

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10500545001	VS-1	Air	11/21/19 11:14	11/22/19 11:40
10500545002	VS-2	Air	11/21/19 11:26	11/22/19 11:40
10500545003	VS-3	Air	11/21/19 11:45	11/22/19 11:40
10500545004	VS-4	Air	11/21/19 12:06	11/22/19 11:40
10500545005	VS-5	Air	11/21/19 12:27	11/22/19 11:40
10500545006	VS-6	Air	11/21/19 12:56	11/22/19 11:40
10500545007	VS-7	Air	11/21/19 01:15	11/22/19 11:40
10500545008	VS-8	Air	11/21/19 01:31	11/22/19 11:40
10500545009	VS-9	Air	11/21/19 01:48	11/22/19 11:40
10500545010	VS-10	Air	11/21/19 02:09	11/22/19 11:40

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SAMPLE ANALYTE COUNT

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10500545001	VS-1	TO-15	MJL	13	PASI-M
10500545002	VS-2	TO-15	MJL	13	PASI-M
10500545003	VS-3	TO-15	MJL	13	PASI-M
10500545004	VS-4	TO-15	MJL	13	PASI-M
10500545005	VS-5	TO-15	MJL	13	PASI-M
10500545006	VS-6	TO-15	MJL	13	PASI-M
10500545007	VS-7	TO-15	MJL	13	PASI-M
10500545008	VS-8	TO-15	MJL	13	PASI-M
10500545009	VS-9	TO-15	MJL	13	PASI-M
10500545010	VS-10	TO-15	MJL	13	PASI-M

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-1 **Lab ID: 10500545001** Collected: 11/21/19 11:14 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<1.4	ug/m3	2.9	1.4	5.47		12/02/19 15:32	75-00-3	
Dichlorodifluoromethane	2.4J	ug/m3	5.5	1.6	5.47		12/02/19 15:32	75-71-8	
1,1-Dichloroethane	<1.2	ug/m3	4.5	1.2	5.47		12/02/19 15:32	75-34-3	
1,2-Dichloroethane	<0.82	ug/m3	2.2	0.82	5.47		12/02/19 15:32	107-06-2	
1,1-Dichloroethene	<1.5	ug/m3	4.4	1.5	5.47		12/02/19 15:32	75-35-4	
cis-1,2-Dichloroethene	<1.2	ug/m3	4.4	1.2	5.47		12/02/19 15:32	156-59-2	
trans-1,2-Dichloroethene	<1.6	ug/m3	4.4	1.6	5.47		12/02/19 15:32	156-60-5	
Tetrachloroethene	8.0	ug/m3	3.8	1.7	5.47		12/02/19 15:32	127-18-4	
1,1,1-Trichloroethane	6.2	ug/m3	6.1	1.7	5.47		12/02/19 15:32	71-55-6	
1,1,2-Trichloroethane	<1.3	ug/m3	3.0	1.3	5.47		12/02/19 15:32	79-00-5	
Trichloroethene	<1.4	ug/m3	3.0	1.4	5.47		12/02/19 15:32	79-01-6	
Trichlorofluoromethane	3.1J	ug/m3	6.2	2.0	5.47		12/02/19 15:32	75-69-4	
Vinyl chloride	<0.69	ug/m3	1.4	0.69	5.47		12/02/19 15:32	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-2 **Lab ID: 10500545002** Collected: 11/21/19 11:26 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.50	ug/m3	1.0	0.50	1.94		11/28/19 00:22	75-00-3	
Dichlorodifluoromethane	1.8J	ug/m3	2.0	0.57	1.94		11/28/19 00:22	75-71-8	
1,1-Dichloroethane	<0.44	ug/m3	1.6	0.44	1.94		11/28/19 00:22	75-34-3	
1,2-Dichloroethane	<0.29	ug/m3	0.80	0.29	1.94		11/28/19 00:22	107-06-2	
1,1-Dichloroethene	<0.53	ug/m3	1.6	0.53	1.94		11/28/19 00:22	75-35-4	
cis-1,2-Dichloroethene	<0.42	ug/m3	1.6	0.42	1.94		11/28/19 00:22	156-59-2	
trans-1,2-Dichloroethene	<0.55	ug/m3	1.6	0.55	1.94		11/28/19 00:22	156-60-5	
Tetrachloroethene	118	ug/m3	1.3	0.61	1.94		11/28/19 00:22	127-18-4	
1,1,1-Trichloroethane	72.3	ug/m3	2.2	0.60	1.94		11/28/19 00:22	71-55-6	
1,1,2-Trichloroethane	<0.47	ug/m3	1.1	0.47	1.94		11/28/19 00:22	79-00-5	
Trichloroethene	1.2	ug/m3	1.1	0.49	1.94		11/28/19 00:22	79-01-6	
Trichlorofluoromethane	3.8	ug/m3	2.2	0.71	1.94		11/28/19 00:22	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.50	0.24	1.94		11/28/19 00:22	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-3 **Lab ID: 10500545003** Collected: 11/21/19 11:45 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.49	ug/m3	1.0	0.49	1.87		11/27/19 23:52	75-00-3	
Dichlorodifluoromethane	<0.55	ug/m3	1.9	0.55	1.87		11/27/19 23:52	75-71-8	
1,1-Dichloroethane	<0.42	ug/m3	1.5	0.42	1.87		11/27/19 23:52	75-34-3	
1,2-Dichloroethane	<0.28	ug/m3	0.77	0.28	1.87		11/27/19 23:52	107-06-2	
1,1-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.87		11/27/19 23:52	75-35-4	
cis-1,2-Dichloroethene	<0.41	ug/m3	1.5	0.41	1.87		11/27/19 23:52	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/m3	1.5	0.53	1.87		11/27/19 23:52	156-60-5	
Tetrachloroethene	307	ug/m3	1.3	0.59	1.87		11/27/19 23:52	127-18-4	
1,1,1-Trichloroethane	3.9	ug/m3	2.1	0.58	1.87		11/27/19 23:52	71-55-6	
1,1,2-Trichloroethane	<0.45	ug/m3	1.0	0.45	1.87		11/27/19 23:52	79-00-5	
Trichloroethene	<0.47	ug/m3	1.0	0.47	1.87		11/27/19 23:52	79-01-6	
Trichlorofluoromethane	3.9	ug/m3	2.1	0.68	1.87		11/27/19 23:52	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.49	0.24	1.87		11/27/19 23:52	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-4 **Lab ID: 10500545004** Collected: 11/21/19 12:06 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.49	ug/m3	1.0	0.49	1.87		11/27/19 23:22	75-00-3	
Dichlorodifluoromethane	<0.55	ug/m3	1.9	0.55	1.87		11/27/19 23:22	75-71-8	
1,1-Dichloroethane	<0.42	ug/m3	1.5	0.42	1.87		11/27/19 23:22	75-34-3	
1,2-Dichloroethane	<0.28	ug/m3	0.77	0.28	1.87		11/27/19 23:22	107-06-2	
1,1-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.87		11/27/19 23:22	75-35-4	
cis-1,2-Dichloroethene	<0.41	ug/m3	1.5	0.41	1.87		11/27/19 23:22	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/m3	1.5	0.53	1.87		11/27/19 23:22	156-60-5	
Tetrachloroethene	345	ug/m3	1.3	0.59	1.87		11/27/19 23:22	127-18-4	
1,1,1-Trichloroethane	0.87J	ug/m3	2.1	0.58	1.87		11/27/19 23:22	71-55-6	
1,1,2-Trichloroethane	<0.45	ug/m3	1.0	0.45	1.87		11/27/19 23:22	79-00-5	
Trichloroethene	<0.47	ug/m3	1.0	0.47	1.87		11/27/19 23:22	79-01-6	
Trichlorofluoromethane	3.7	ug/m3	2.1	0.68	1.87		11/27/19 23:22	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.49	0.24	1.87		11/27/19 23:22	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-5 **Lab ID: 10500545005** Collected: 11/21/19 12:27 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.47	ug/m3	0.96	0.47	1.8		11/27/19 22:52	75-00-3	
Dichlorodifluoromethane	1.1J	ug/m3	1.8	0.53	1.8		11/27/19 22:52	75-71-8	
1,1-Dichloroethane	<0.40	ug/m3	1.5	0.40	1.8		11/27/19 22:52	75-34-3	
1,2-Dichloroethane	<0.27	ug/m3	0.74	0.27	1.8		11/27/19 22:52	107-06-2	
1,1-Dichloroethene	<0.49	ug/m3	1.5	0.49	1.8		11/27/19 22:52	75-35-4	
cis-1,2-Dichloroethene	<0.39	ug/m3	1.5	0.39	1.8		11/27/19 22:52	156-59-2	
trans-1,2-Dichloroethene	0.77J	ug/m3	1.5	0.51	1.8		11/27/19 22:52	156-60-5	
Tetrachloroethene	769	ug/m3	24.8	11.3	36		11/30/19 12:27	127-18-4	
1,1,1-Trichloroethane	<0.56	ug/m3	2.0	0.56	1.8		11/27/19 22:52	71-55-6	
1,1,2-Trichloroethane	<0.44	ug/m3	1.0	0.44	1.8		11/27/19 22:52	79-00-5	
Trichloroethene	<0.46	ug/m3	0.98	0.46	1.8		11/27/19 22:52	79-01-6	
Trichlorofluoromethane	4.7	ug/m3	2.1	0.66	1.8		11/27/19 22:52	75-69-4	
Vinyl chloride	<0.23	ug/m3	0.47	0.23	1.8		11/27/19 22:52	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-6 **Lab ID: 10500545006** Collected: 11/21/19 12:56 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.45	ug/m3	0.93	0.45	1.74		11/27/19 22:23	75-00-3	
Dichlorodifluoromethane	8.5	ug/m3	1.8	0.51	1.74		11/27/19 22:23	75-71-8	
1,1-Dichloroethane	<0.39	ug/m3	1.4	0.39	1.74		11/27/19 22:23	75-34-3	
1,2-Dichloroethane	<0.26	ug/m3	0.72	0.26	1.74		11/27/19 22:23	107-06-2	
1,1-Dichloroethene	1.1J	ug/m3	1.4	0.48	1.74		11/27/19 22:23	75-35-4	
cis-1,2-Dichloroethene	<0.38	ug/m3	1.4	0.38	1.74		11/27/19 22:23	156-59-2	
trans-1,2-Dichloroethene	1.2J	ug/m3	1.4	0.50	1.74		11/27/19 22:23	156-60-5	
Tetrachloroethene	75.0	ug/m3	1.2	0.55	1.74		11/27/19 22:23	127-18-4	
1,1,1-Trichloroethane	90.9	ug/m3	1.9	0.54	1.74		11/27/19 22:23	71-55-6	
1,1,2-Trichloroethane	<0.42	ug/m3	0.97	0.42	1.74		11/27/19 22:23	79-00-5	
Trichloroethene	25.1	ug/m3	0.95	0.44	1.74		11/27/19 22:23	79-01-6	
Trichlorofluoromethane	8.6	ug/m3	2.0	0.64	1.74		11/27/19 22:23	75-69-4	
Vinyl chloride	<0.22	ug/m3	0.45	0.22	1.74		11/27/19 22:23	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-7 **Lab ID: 10500545007** Collected: 11/21/19 01:15 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.44	ug/m3	0.92	0.44	1.71		11/27/19 21:53	75-00-3	
Dichlorodifluoromethane	0.87J	ug/m3	1.7	0.50	1.71		11/27/19 21:53	75-71-8	
1,1-Dichloroethane	<0.38	ug/m3	1.4	0.38	1.71		11/27/19 21:53	75-34-3	
1,2-Dichloroethane	<0.26	ug/m3	0.70	0.26	1.71		11/27/19 21:53	107-06-2	
1,1-Dichloroethene	<0.47	ug/m3	1.4	0.47	1.71		11/27/19 21:53	75-35-4	
cis-1,2-Dichloroethene	<0.37	ug/m3	1.4	0.37	1.71		11/27/19 21:53	156-59-2	
trans-1,2-Dichloroethene	3.6	ug/m3	1.4	0.49	1.71		11/27/19 21:53	156-60-5	
Tetrachloroethene	842	ug/m3	23.6	10.7	34.2		11/30/19 12:55	127-18-4	
1,1,1-Trichloroethane	<0.53	ug/m3	1.9	0.53	1.71		11/27/19 21:53	71-55-6	
1,1,2-Trichloroethane	<0.41	ug/m3	0.95	0.41	1.71		11/27/19 21:53	79-00-5	
Trichloroethene	<0.43	ug/m3	0.93	0.43	1.71		11/27/19 21:53	79-01-6	
Trichlorofluoromethane	4.4	ug/m3	1.9	0.63	1.71		11/27/19 21:53	75-69-4	
Vinyl chloride	<0.22	ug/m3	0.44	0.22	1.71		11/27/19 21:53	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-8 **Lab ID: 10500545008** Collected: 11/21/19 01:31 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.44	ug/m3	0.90	0.44	1.68		11/27/19 21:23	75-00-3	
Dichlorodifluoromethane	2.5	ug/m3	1.7	0.49	1.68		11/27/19 21:23	75-71-8	
1,1-Dichloroethane	<0.38	ug/m3	1.4	0.38	1.68		11/27/19 21:23	75-34-3	
1,2-Dichloroethane	<0.25	ug/m3	0.69	0.25	1.68		11/27/19 21:23	107-06-2	
1,1-Dichloroethene	<0.46	ug/m3	1.4	0.46	1.68		11/27/19 21:23	75-35-4	
cis-1,2-Dichloroethene	<0.37	ug/m3	1.4	0.37	1.68		11/27/19 21:23	156-59-2	
trans-1,2-Dichloroethene	<0.48	ug/m3	1.4	0.48	1.68		11/27/19 21:23	156-60-5	
Tetrachloroethene	7.3	ug/m3	1.2	0.53	1.68		11/27/19 21:23	127-18-4	
1,1,1-Trichloroethane	<0.52	ug/m3	1.9	0.52	1.68		11/27/19 21:23	71-55-6	
1,1,2-Trichloroethane	<0.41	ug/m3	0.93	0.41	1.68		11/27/19 21:23	79-00-5	
Trichloroethene	<0.43	ug/m3	0.92	0.43	1.68		11/27/19 21:23	79-01-6	
Trichlorofluoromethane	5.0	ug/m3	1.9	0.61	1.68		11/27/19 21:23	75-69-4	
Vinyl chloride	<0.21	ug/m3	0.44	0.21	1.68		11/27/19 21:23	75-01-4	

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-9 **Lab ID: 10500545009** Collected: 11/21/19 01:48 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.44	ug/m3	0.90	0.44	1.68		11/27/19 20:53	75-00-3	
Dichlorodifluoromethane	2.6	ug/m3	1.7	0.49	1.68		11/27/19 20:53	75-71-8	
1,1-Dichloroethane	<0.38	ug/m3	1.4	0.38	1.68		11/27/19 20:53	75-34-3	
1,2-Dichloroethane	<0.25	ug/m3	0.69	0.25	1.68		11/27/19 20:53	107-06-2	
1,1-Dichloroethene	<0.46	ug/m3	1.4	0.46	1.68		11/27/19 20:53	75-35-4	
cis-1,2-Dichloroethene	<0.37	ug/m3	1.4	0.37	1.68		11/27/19 20:53	156-59-2	
trans-1,2-Dichloroethene	<0.48	ug/m3	1.4	0.48	1.68		11/27/19 20:53	156-60-5	
Tetrachloroethene	3.2	ug/m3	1.2	0.53	1.68		11/27/19 20:53	127-18-4	
1,1,1-Trichloroethane	<0.52	ug/m3	1.9	0.52	1.68		11/27/19 20:53	71-55-6	
1,1,2-Trichloroethane	<0.41	ug/m3	0.93	0.41	1.68		11/27/19 20:53	79-00-5	
Trichloroethene	<0.43	ug/m3	0.92	0.43	1.68		11/27/19 20:53	79-01-6	
Trichlorofluoromethane	2.4	ug/m3	1.9	0.61	1.68		11/27/19 20:53	75-69-4	
Vinyl chloride	<0.21	ug/m3	0.44	0.21	1.68		11/27/19 20:53	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Sample: VS-10 **Lab ID: 10500545010** Collected: 11/21/19 02:09 Received: 11/22/19 11:40 Matrix: Air

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15							
Chloroethane	<0.49	ug/m3	1.0	0.49	1.87		11/27/19 20:23	75-00-3	
Dichlorodifluoromethane	2.7	ug/m3	1.9	0.55	1.87		11/27/19 20:23	75-71-8	
1,1-Dichloroethane	<0.42	ug/m3	1.5	0.42	1.87		11/27/19 20:23	75-34-3	
1,2-Dichloroethane	<0.28	ug/m3	0.77	0.28	1.87		11/27/19 20:23	107-06-2	
1,1-Dichloroethene	<0.51	ug/m3	1.5	0.51	1.87		11/27/19 20:23	75-35-4	
cis-1,2-Dichloroethene	<0.41	ug/m3	1.5	0.41	1.87		11/27/19 20:23	156-59-2	
trans-1,2-Dichloroethene	<0.53	ug/m3	1.5	0.53	1.87		11/27/19 20:23	156-60-5	
Tetrachloroethene	1.8	ug/m3	1.3	0.59	1.87		11/27/19 20:23	127-18-4	
1,1,1-Trichloroethane	<0.58	ug/m3	2.1	0.58	1.87		11/27/19 20:23	71-55-6	
1,1,2-Trichloroethane	<0.45	ug/m3	1.0	0.45	1.87		11/27/19 20:23	79-00-5	
Trichloroethene	<0.47	ug/m3	1.0	0.47	1.87		11/27/19 20:23	79-01-6	
Trichlorofluoromethane	2.0J	ug/m3	2.1	0.68	1.87		11/27/19 20:23	75-69-4	
Vinyl chloride	<0.24	ug/m3	0.49	0.24	1.87		11/27/19 20:23	75-01-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 51-0367.10 NOR LAKE
Pace Project No.: 10500545

QC Batch: 647683 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10500545001

METHOD BLANK: 3484854 Matrix: Air
Associated Lab Samples: 10500545001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.31	1.1	12/02/19 09:03	
1,1,2-Trichloroethane	ug/m3	<0.24	0.56	12/02/19 09:03	
1,1-Dichloroethane	ug/m3	<0.22	0.82	12/02/19 09:03	
1,1-Dichloroethene	ug/m3	<0.27	0.81	12/02/19 09:03	
1,2-Dichloroethane	ug/m3	<0.15	0.41	12/02/19 09:03	
Chloroethane	ug/m3	<0.26	0.54	12/02/19 09:03	
cis-1,2-Dichloroethene	ug/m3	<0.22	0.81	12/02/19 09:03	
Dichlorodifluoromethane	ug/m3	<0.29	1.0	12/02/19 09:03	
Tetrachloroethene	ug/m3	<0.31	0.69	12/02/19 09:03	
trans-1,2-Dichloroethene	ug/m3	<0.28	0.81	12/02/19 09:03	
Trichloroethene	ug/m3	<0.25	0.55	12/02/19 09:03	
Trichlorofluoromethane	ug/m3	<0.37	1.1	12/02/19 09:03	
Vinyl chloride	ug/m3	<0.13	0.26	12/02/19 09:03	

LABORATORY CONTROL SAMPLE: 3484855

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	51.8	93	70-130	
1,1,2-Trichloroethane	ug/m3	55.5	56.9	103	70-130	
1,1-Dichloroethane	ug/m3	41.1	40.2	98	70-130	
1,1-Dichloroethene	ug/m3	40.3	39.2	97	70-130	
1,2-Dichloroethane	ug/m3	41.1	41.7	101	70-130	
Chloroethane	ug/m3	26.8	27.2	102	70-130	
cis-1,2-Dichloroethene	ug/m3	40.3	40.8	101	70-130	
Dichlorodifluoromethane	ug/m3	50.3	47.9	95	70-130	
Tetrachloroethene	ug/m3	68.9	67.5	98	70-130	
trans-1,2-Dichloroethene	ug/m3	40.3	39.5	98	70-130	
Trichloroethene	ug/m3	54.6	51.1	94	70-130	
Trichlorofluoromethane	ug/m3	57.1	53.8	94	65-130	
Vinyl chloride	ug/m3	26	25.9	100	70-130	

SAMPLE DUPLICATE: 3485223

Parameter	Units	10500662001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	<0.44		25	
1,1,2-Trichloroethane	ug/m3	ND	<0.35		25	
1,1-Dichloroethane	ug/m3	ND	<0.32		25	
1,1-Dichloroethene	ug/m3	ND	<0.39		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

SAMPLE DUPLICATE: 3485223

Parameter	Units	10500662001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/m3	ND	<0.22		25	
Chloroethane	ug/m3	ND	<0.37		25	
cis-1,2-Dichloroethene	ug/m3	ND	<0.32		25	
Dichlorodifluoromethane	ug/m3	91.4	89.5	2	25	
Tetrachloroethene	ug/m3	2.6	2.7	1	25	
trans-1,2-Dichloroethene	ug/m3	ND	<0.41		25	
Trichloroethene	ug/m3	ND	<0.36		25	
Trichlorofluoromethane	ug/m3	2.5	2.3	5	25	
Vinyl chloride	ug/m3	ND	<0.18		25	

SAMPLE DUPLICATE: 3485224

Parameter	Units	10500662002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	<0.36		25	
1,1,2-Trichloroethane	ug/m3	ND	<0.29		25	
1,1-Dichloroethane	ug/m3	ND	<0.27		25	
1,1-Dichloroethene	ug/m3	ND	<0.32		25	
1,2-Dichloroethane	ug/m3	ND	<0.18		25	
Chloroethane	ug/m3	ND	<0.31		25	
cis-1,2-Dichloroethene	ug/m3	ND	<0.26		25	
Dichlorodifluoromethane	ug/m3	33.1	33.2	0	25	
Tetrachloroethene	ug/m3	12.0	12.3	2	25	
trans-1,2-Dichloroethene	ug/m3	ND	<0.34		25	
Trichloroethene	ug/m3	ND	<0.30		25	
Trichlorofluoromethane	ug/m3	ND	1.2J		25	
Vinyl chloride	ug/m3	ND	<0.15		25	

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QUALIFIERS

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 51-0367.10 NOR LAKE

Pace Project No.: 10500545

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10500545001	VS-1	TO-15	647683		
10500545002	VS-2	TO-15	647401		
10500545003	VS-3	TO-15	647401		
10500545004	VS-4	TO-15	647401		
10500545005	VS-5	TO-15	647401		
10500545006	VS-6	TO-15	647401		
10500545007	VS-7	TO-15	647401		
10500545008	VS-8	TO-15	647401		
10500545009	VS-9	TO-15	647401		
10500545010	VS-10	TO-15	647401		

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AIR: CHAIN-OF-CUSTO

The Chain-of-Custody is a LEGAL DOCUMENT. AI

WO#: 10500545



48163

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Program	
Company: AYRES ASSOCIATES		Report To: GREG ALDRIAN		Attention:		<input type="checkbox"/> UST <input type="checkbox"/> Superfund <input type="checkbox"/> Emissions <input type="checkbox"/> Clean Air Act <input type="checkbox"/> Voluntary Clean Up <input type="checkbox"/> Dry Clean <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Address: 3430 ALEXWOOD PKY BETH CLAIR, WI 53001		Copy To:		Company Name: STAMER		Location of Sampling by State: WI	
Email To: ALDRIAN@AYRESASSOCIATES		Purchase Order No.:		Address:		Reporting Units ug/m ³ <input type="checkbox"/> mg/m ³ <input type="checkbox"/> PPBV <input type="checkbox"/> PPMV <input type="checkbox"/> Other <input type="checkbox"/>	
Phone: 715-834-3161		Project Name: NOR LAKE		Pace Quote Reference:		Report Level: II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> Other <input type="checkbox"/>	
Requested Due Date/TAT:		Project Number: 51-0367-10		Pace Project Manager/Sales Rep:			
				Pace Profile #: 39395 #7			

ITEM #	'Section D Required Client Information AIR SAMPLE ID Sample IDs MUST BE UNIQUE	Valid Media Codes MEDIA CODE Tedlar Bag TB 1 Liter Summa Can 1LC 6 Liter Summa Can 6LC Low Volume Puff LVP High Volume Puff HVP Other PM10	MEDIA CODE	PID Reading (Client only)	COLLECTED				Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method:							Pace Lab ID						
					COMPOSITE START		COMPOSITE - END/GRAB						PH10	3C - Fiked Gas (%)	TO-3 BTEX	TO-14 TO-14M (Methane)	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated		TO-15 Short List (Other)					
					DATE	TIME	DATE	TIME																		
1	VS-1		32C		11/21/19	11:05	11/21/19	11:14	28.0	3.0	319	10773										X	001			
2	VS-2					11:16		11:26	29.0	2.0	1108	2372												002		
3	VS-3					11:35		11:45	29.5	3.0	2011	1825													003	
4	VS-4					11:55		12:06	29.5	3.0	2247	1712													004	
5	VS-5					12:15		12:27	29.0	1.0	2230	0796													005	
6	VS-6					12:40		12:56	29.5	1.0	3150	1636													006	
7	VS-7					1:04		1:15	28.5	3.0	2442	1660													007	
8	VS-8					1:26		1:31	29.5	3.0	2399	0625													008	
9	VS-9					1:40		1:48	29.0	2.0	1150	0617													009	
10	VS-10					2:00		2:09	29.5	3.0	2521	2279													010	
11																										
12																										

Comments:
 RUN SAME
 TO-15 ANALYTICS
 AS THE 3RD
 SAMPLING EVENT

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
<i>[Signature]</i>	11/21/19	4:30	FEDEX	11/21/19	4:30	Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
			WJOL Pace	11/21/19	11:40	Y/N	Y/N	Y/N	Y/N
						Y/N	Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: **GREG ALDRIAN**
 SIGNATURE of SAMPLER: *[Signature]* DATE Signed (MM / DD / YY): **11/21/19**

ORIGINAL



Air Sample Condition Upon Receipt

Client Name:
Ayres ASSO.

Project #:

WO# : 10500545

Courier: Fed Ex UPS USPS Client
 Pace SpeedDee Commercial See Exception

PM: JDD Due Date: 12/03/19
CLIENT: AYRES ASSOC.

Tracking Number: **1083 0282 4162**

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Tin Can Other: _____ Temp Blank rec: Yes No

Temp. (TO17 and TO13 samples only) (°C): _____ Corrected Temp (°C): _____

Thermometer Used: G87A9170600254
 G87A9155100842

Temp should be above freezing to 6°C Correction Factor: _____

Date & Initials of Person Examining Contents: **WD 11/22/19**

Type of ice Received Blue Wet None

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Media: <u>Air Can</u> Airbag Filter TDT Passive		11. Individually Certified Cans Y <u>(N)</u> (list which samples)
Is sufficient information available to reconcile samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12. VS-7 Can# is wrong on CoC CANS WERE NOT LABELED, SORTED BY CAN#
Do cans need to be pressurized? (DO NOT PRESSURIZE 3C or ASTM 1946!!!)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13.

Gauge # 10AIR26 10AIR34 10AIR35 4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
VS-1	3191	0873	-2	to	VS-9	1150	0617	0	to
VS-2	1108	2372	-4	to	VS-10	2521	2279	-3	to
VS-3	2011	1825	-3	to					
VS-4	2247	1712	-3	to					
VS-5	2230	0796	-2	to					
VS-6	3150	1636	-1	to					
VS-7	2422	1660	-0.5	to					
VS-8	2399	0625	0	to					

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____

Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____

Date: 11/25/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Attachment C.2. – Investigative Waste

Not applicable – As documented in previous reports (ex. Ayres Associates, December 1992) soil cuttings were thin spread in the immediate vicinity of the installed monitoring well or boring location and purged groundwater was allowed to infiltrate, unless otherwise required by the WDNR to be barreled or thin spread in a designated location (ex. Braun Intertec, April 1992).

Attachment C.3. – Description of Methodology

Not applicable – Neither the DNR RCL Spreadsheet nor other methodology was used since there are no NR 140 ES exceedances detected in groundwater – indicating no residual soil contamination over RCL standards.

Attachment C.4. – Construction Documentation

Not applicable – Construction documentation for all remedial actions have been previously submitted to the WDNR.

Attachment C.5. – Decommissioning of Remedial Systems

All monitoring wells associated with this investigation will be abandoned in compliance with NR 141 code.

All residential water supply wells that have activated carbon filtration systems installed will be proposed for removal.

Remediation systems including the soil vapor extraction (SVE) system and the groundwater treatment systems, including recovery wells RW-1 and RW-2, treatment tower, and seepage cell, will be properly abandoned.

September 20, 2019



Candace Sykora
Wisconsin Department of Natural Resources
890 Spruce St.
Baldwin, WI 54002

Re: Groundwater recovery and treatment system (GRTS)
And soil vapor extraction (SVE) system removal
Nor-Lake Inc., Town of Hudson, Wisconsin

Dear Ms. Sykora,

As you know Ayres is assisting Nor-Lake with final closure documentation for this site for submittal to the WDNR for review. As part of our path to closure, it is assumed the removal of the SVE system and GRTS will be required along with closing out the associated air and WPDES permit. The GRTS has not been operational for five years and the well pumps in RW-1 and RW-2 are both burned out. There would be no reason to believe this system will ever be started again as additional pumping will have no effect on groundwater quality.


Nor-Lake has operated a groundwater pump and treatment system from 1984 to 2014 and a soil vapor extraction (SVE) system since 1993. The two systems were installed to remove volatile organic compounds (VOCs) from the groundwater and soil beneath the Nor-Lake plant (source area). The systems have been very successful at removing VOCs in soil and groundwater in the source area. There are no soil residual contaminant levels (RCLs) above the direct contact or groundwater pathway present at the site. Current groundwater sampling indicates no WDNR enforcement standards (ES) are exceeded in any monitoring or private well within the area of concern (AOC).

Ayres on behalf of Nor-lake is proposing removal of the GRTS and closeout of associated WPDES permit during nor-lakes next budgeting cycle. Ayres will conduct an asbestos survey of the GRTS building prior to demolition and our sub-contractor will complete a demolition permit for submittal to the state prior to the start of work. In addition, we will also request removal of the SVE system after the fourth round of vapor sampling verifies there are no vapor intrusion issues at the facility.

If the WDNR concurs with this request, we will schedule the work based around budgeting and sub-contractors schedule.

Please contact me with questions and thank you for your consideration in this matter.
Sincerely,

Ayres Associates Inc.


Gregory Aldrian, PG
Environmental Project Manager
715.834.3161
cc: Nor-Lake Inc.

File: V:\ENV\FINAL\8.51\2019\1. To DNR GRTS and SVE Removal.docx



3433 Oakwood Hills Parkway • Eau Claire, WI 54701-7698
800.666.3103 • www.AyresAssociates.com