

DEC 1 6 2013 DNR - SUPERIOR

Antea USA, Inc. 5910 Rice Creek Parkway, Suite 100 St. Paul, MN 55126 USA www.anteagroup.com

December 11, 2013

Neal Baudhuin Northern Region Air Management Supervisor Wisconsin Department of Natural Resources 107 Sutliff Avenue, Rhinelander, WI 54501 Neal.baudhuin@wisconsin.gov

Subject:

Report of 2013 Air Emissions from VE-TFRT and SVE-only Systems

Terminal Property at the Former Amoco Terminal #406

2904 Winter Street, Superior, WI 54880 Antea Group Project No. WISUPER131

BRRTS No. 02-16-000331

Dear Mr. Baudhuin,

Antea® Group submits the following report of the air monitoring conducted in 2013 on the vacuum-enhanced total fluids recovery and treatment (VE-TFRT) system and the SVE-only system located at the Former Amoco Terminal #406 Property (current Lake City Towing Property - Figure 1 Former Terminal Map).

The VE-TFRT system was installed in 2004 and operated through July 2012 at which time operation was terminated due to limited recovery. The VE-TFRT system did not operate in 2013. The SVE-only system was installed in 1994 and operated from 1994 to 2004. In 2004, the SVE-only system was shut down due to diminished recovery. On August 4, 2009, the SVE-only system was restarted to address subsurface impact near Winter Street and operated through August 2013 at which time system operation was terminated with WDNR approval due to limited vapor-phase hydrocarbon recovery.

System performance data was collected for the SVE-only system on January 30, May 16, and August 15, 2013. Total estimated VOC (THC as gas) emissions from the system ranged 0 to 0.02 pounds per hour during 2013. The estimated benzene emitted in 2013 was 0.6 pounds (Table 1).

Based on the 2013 data, emission rates for the SVE-only system did not exceed the 5.7 pounds per hour for volatile organic compounds (VOCs) or 300 pounds per year for benzene thresholds established by NR 407 and NR 445, respectively. Therefore, the exemption from an operating permit set forth in NR 407.03(1)(sm)2 was applied to SVE-only system operation at the subject site.



Mr. Neal Baudhuin WDNR – Bureau of Air Management December 11, 2013 Page 2

As agreed upon between Antea Group and WDNR in October 2004, emissions resulting from remedial efforts at this site are reported and managed separately from the recovery systems at the former Barge Dock Property (BRRTS Nos. 02-16-297993, 02-16-117873, 02-16-284811, and 02-16-297979) located north across Winter Street due to separate releases and different property owners.

The VE-TFRT system on the Former Terminal Property (current Lake City Towing) did not operate in 2013 and was decommissioned and removed from the site October 9-11, 2013 with WDNR approval. No further vapor-phase emissions associated with environmental remediation are anticipated from the Former Terminal Property. Please do not hesitate to contact me at (651)697-5219, or by email at jonathan.zimadrs@anteagroup.com, if you have any questions or require additional information regarding the subject site.

Sincerely,

Jonathan Zimdars Senior Project Manager

651.697.5219

Jonathan.Zimdars@AnteaGroup.com

Antea Group

Ms. Erin Endsley, WDNR

Mr. Jay Thompson, Lake City Towing

Enclosures:

c:

Figure 1 - Former Terminal Map

Table 1 – SVE Emission Summary (SVE-only system)
Pace Analytical Reports: 10218903, 10229043, 10238921

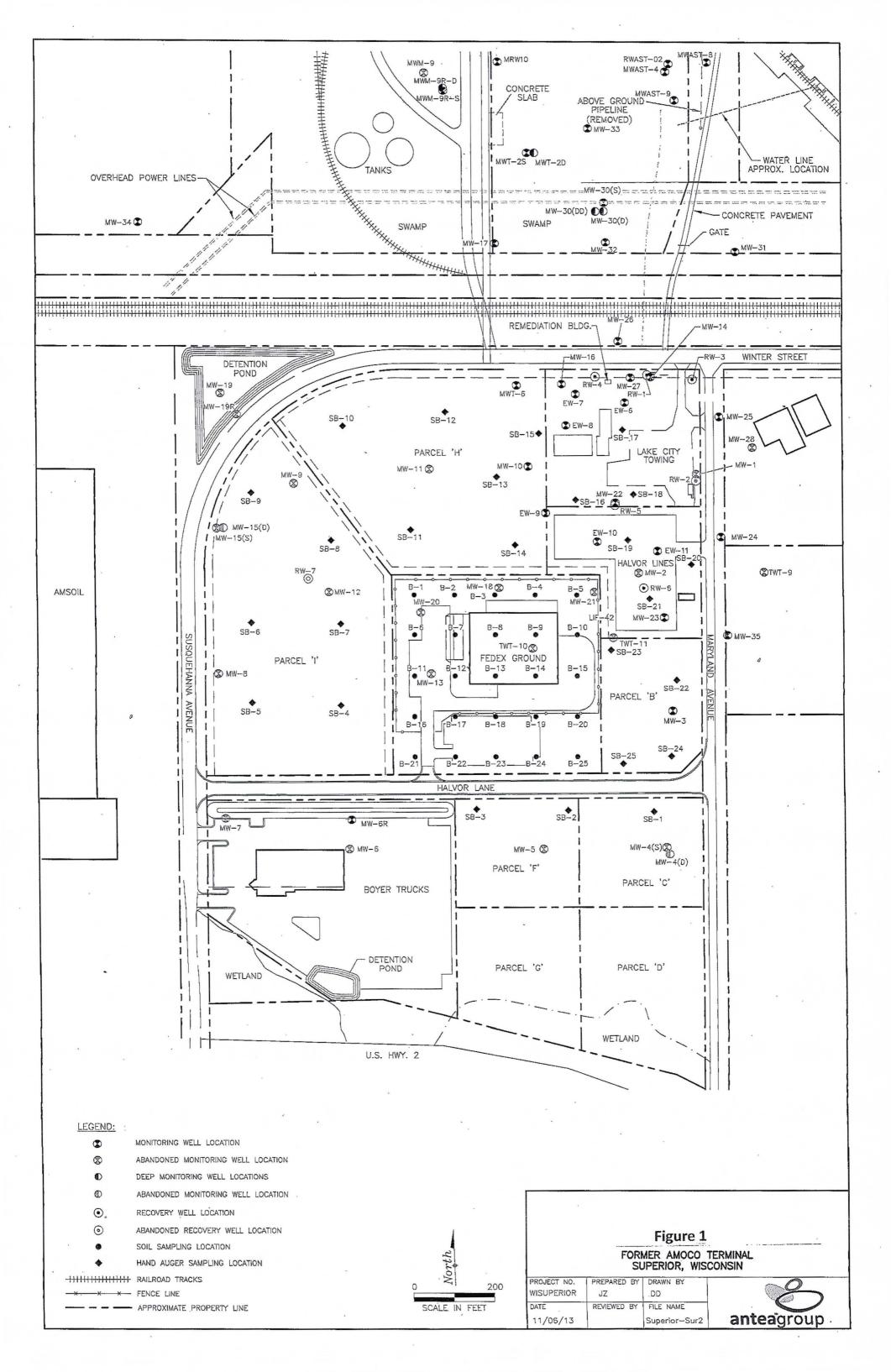
Table 1 SVE Emission Summary

SVE-only System
Former Amoco Superior Terminal No. 406
2904 Winter Street, Superior, Wisconsin

	Exhaust Flow	Temperature	Exhaust Flow	Period Hours	Cumulative Hours	Exhaust THC	Exhaust Benzene	THC Emissions	Cumulative Annual Benzene
Date	(acfm)	(° F)	(scfm)	(hours)	(hours)	(ppmv)	(ppmv)	(lbs/hr)	(lbs)
8/4/2009	0.00	0		#N/A	0.0				0
8/5/2009	0.00	0	85 ¹	14.08	14.1	288	0	0.36	0
8/18/2009	61.28	98	43	317.36	331.4	72.6	2.6	0.046	0.4
8/26/2009	71.49	95	44	190.45	521.9	37.5	0.89	0.024	0.5
9/8/2009	81.70	92	44	307.31	829.2	34.8	0.57	0.023	0.6
10/6/2009	81.70	76	44	670.6	1499.8	41.1	2.6	0.027	1.5
11/2/2009	81.70	70	44	654.67	2154.5	16.3	0.19	0.011	1.6
12/7/2009	81.70	72	44	835.64	2990.1	12.6	0	0.008	1.6
2/3/2010	81.70	62	44	1392.73	4382.8	52.6	0.99	0.034	0.7
5/11/2010	81.70	78	44	2324.14	6707.0	67.8	1.1	0.044	2.1
7/21/2010	71.49	106	44	1701.73	8408.7	6.8	0	0.004	2.1
11/4/2010	71.49	90	44	2542.84	10951.6	0	0	0	2.1
1/20/2011	71.49	68	44	1848.05	12799.6	17.6	0.4	0.01	0.4
4/21/2011	81.70	78	44	2181.88	14981.5	0	0	0	0.4
7/28/2011	51.06	128	42	2140.78	17122.3	3.4	0	0.002	0.4
12/29/2011	81.70	70	44	3413.03	20535.3	149	1.1	0.10	2.4
1/26/2012	81.70	70	44	647.61	21182.9	137	2.6	0.09	0.9
4/19/2012	81.70	95	44	2012.66	23195.6	0	0	0.00	0.9
7/5/2012	81.70	100	86	1701.76	24897.3	0	0	0.00	0.9
10/23/2012	81.70	100	86	408	25305.3	9.2	0.2	0.01	1.0
1/30/2013	81.70	50	44	991.8	26297.1	8.3	0	0.01	0.0
5/16/2013	81.70	80	44	2539.2	28836.3	0	0	0.00	0.0
8/15/2013	81.70	99	77	1993.1	30829.4	15.8	0.34	0.02	0.6

Notes:

Flow on 8/5/2009 taken from blower curve based on measured vacuum at blower
 Flow based on 3" standard galvanized piping.







February 12, 2013

Mr. Clarence Bieze Antea Group 5910 Rice Creek Parkway Suite 100 Saint Paul, MN 55126

RE: Project: WIS-Superior-Former Amoco

Pace Project No.: 10218903

Dear Mr. Bieze:

Enclosed are the analytical results for sample(s) received by the laboratory on January 31, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Diane J. Anderson

Diany anderson

diane.anderson@pacelabs.com Project Manager

Enclosures







CERTIFICATIONS

Project:

WIS-Superior-Former Amoco

Pace Project No.:

10218903

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414 A2LA Certification #: 2926.01 Alaska Certification #: UST-078 Alaska Certification #MN00064 Arizona Certification #: AZ-0014 Arkansas Certification #: 88-0680 California Certification #: 01155CA Colorado Certification #Pace Connecticut Certification #: PH-0256 EPA Region 8 Certification #: Pace Florida/NELAP Certification #: E87605 Georgia Certification #: 959 Hawaii Certification #Pace Idaho Certification #: MN00064 Illinois Certification #: 200011 Kansas Certification #: E-10167 Louisiana Certification #: 03086 Louisiana Certification #: LA080009 Maine Certification #: 2007029 Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Mississippi Certification #: Pace

Minnesota Certification #: 027-053-137

Montana Certification #: MT CERT0092 Nevada Certification #: MN_00064 Nebraska Certification #: Pace New Jersey Certification #: MN-002 New York Čertification #: 11647 North Carolina Certification #: 530 North Dakota Certification #: R-036 North Dakota Certification #: R-036A Ohio VAP Certification #: CL101 Oklahoma Certification #: 9507 Oregon Certification #: MN200001 Oregon Certification #: MN300001 Pennsylvania Certification #: 68-00563 Puerto Rico Certification Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Weekington Certification #: C754 Washington Certification #: C754 West Virginia Certification #: 382 Wisconsin Certification #: 999407970





SAMPLE SUMMARY

Project:

WIS-Superior-Former Amoco

Pace Project No.:

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10218903001	SVE-Winter Street	Air	01/30/13 15:20	01/31/13 12:00
10218903002	Passive Air Vent Sample PAV12	Air	01/30/13 14:35	01/31/13 12:00





SAMPLE ANALYTE COUNT

Project:

WIS-Superior-Former Amoco

Pace Project No.:

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10218903001	SVE-Winter Street	TO-3 Air	RTP	8
		TO-3 Air	SK4	1
10218903002	Passive Air Vent Sample PAV12	TO-3 Air	RTP	8





ANALYTICAL RESULTS

Project:

WIS-Superior-Former Amoco

Pace Project No.:

Sample: SVE-Winter Street	Lab ID: 10218903001	Collected: 01/30/13 15:20	Received: 01/31/13 12:00	Matrix: Air
Parameters	Results Units	Report Limit DF	Prepared Analyzed	CAS No. Qual
TO3 GCV AIR BTEX BAG	Analytical Method: TO-3 Air			
Benzene	ND ppmv	0.25 2.52	02/07/13 11:1	1 71-43-2
Ethylbenzene	ND ppmv	0.25 2.52	02/07/13 11:1	1 100-41-4
Methyl-tert-butyl ether	ND ppmv	0.25 2.52	02/07/13 11:1	1 1634-04-4 A4
THC as Gas	8.3 ppmv	2.5 2.52	02/07/13 11:1	1
Toluene	ND ppmv	0.25 2.52	02/07/13 11:1	1 108-88-3
Xylene (Total)	ND ppmv	0.76 2.52	02/07/13 11:1	1 1330-20-7
m&p-Xylene	ND ppmv	0.50 2.52	02/07/13 11:1	1 179601-23-1
o-Xylene	ND ppmv	0.25 2.52	02/07/13 11:1	1 95-47-6
TO3 GCV AIR Meth, Ethane, Ethene	Analytical Method: TO-3 Air			
Methane	500 ppmv	50.4 50.4	02/11/13 13:4	2 74-82-8 A4





ANALYTICAL RESULTS

Project:

WIS-Superior-Former Amoco

Pace Project No.:

Sample: Passive Air Vent Sample PAV12	Lab ID: 102	18903002	Collected: 01/30/	13 14:35	Received: 0	1/31/13 12:00	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO3 GCV AIR BTEX BAG	Analytical Met	hod: TO-3 Air						
Benzene	ND pp	omv	0.25	2.52		02/07/13 11:24	71-43-2	
Ethylbenzene	ND pp	omv	0.25	2.52		02/07/13 11:24	100-41-4	
Methyl-tert-butyl ether	ND pp	omv	0.25	2.52		02/07/13 11:24	1634-04-4	A4
THC as Gas	ND pp	omv	ໍ 2.5	2.52		02/07/13 11:24	ļ	
Toluene	ND pp	omv	0.25	2.52		02/07/13 11:24	108-88-3	
Xylene (Total)	ND pp	omv	0.76	2.52		02/07/13 11:24	1330-20-7	
m&p-Xylene	ND pp	omv	0.50	2.52		02/07/13 11:24	179601-23-1	
o-Xylene	ND pp	mv	0.25	2.52		02/07/13 11:24	95-47-6	





QUALITY CONTROL DATA

Project:

WIS-Superior-Former Amoco

Pace Project No.:

10218903

QC Batch:

AIR/16747

Analysis Method:

TO-3 Air

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR BTEX BAG

Associated Lab Samples:

METHOD BLANK: 1374359

Matrix: Air

Associated Lab Samples:

10218903001, 10218903002

10218903001, 10218903002

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Parameter	Units	Result	Limit	Analyzed	Qualifiers
Benzene	ppmv	ND	0.10	02/07/13 08:55	
Ethylbenzene	ppmv	ND	0.10	02/07/13 08:55	
m&p-Xylene	ppmv	ND	0.20	02/07/13 08:55	
Methyl-tert-butyl ether	ppmv	ND	0.10	02/07/13 08:55	
o-Xylene	ppmv	ND	0.10	02/07/13 08:55	
THC as Gas	ppmv	ND	1.0	02/07/13 08:55	
Toluene	ppmv	ND	0.10	02/07/13 08:55	
Xylene (Total)	ppmv	ND	0.30	02/07/13 08:55	
a,a,a-Trifluorotoluene (S)	%	110	30-150	02/07/13 08:55	

LABORATORY CONTROL SAM	PLE & LCSD: 137438	50	13	74361						
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ppmv	1	1.1	0.99	113	99	70-130	13	30	
Ethylbenzene	ppmv	1	1.1	0.95	106	95	70-130	11	30	
m&p-Xylene	ppmv	2	2.1	1.9	106	96	70-130	10	30	
Methyl-tert-butyl ether	ppmv	1	1.2	1.0	117	103	70-130	12	30	
o-Xylene	ppmv	1	1.0	0.94	104	94	70-130	10	30	
THC as Gas	ppmv	10	11.0	10.2	110	102	70-130	8	30	
Toluene	ppmv	1	1.1	0.96	110	96	70-130	13	30	
Xylene (Total)	ppmv	3	3.2	2.9	105	96	70-130	. 10	30	
a,a,a-Trifluorotoluene (S)	%				89	96	30-150			





QUALITY CONTROL DATA

Project:

WIS-Superior-Former Amoco

10218903001

Pace Project No.:

10218903

QC Batch:

AIR/16757

Analysis Method:

TO-3 Air

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR METH, ETHANE, ETHENE

Associated Lab Samples:

METHOD BLANK: 1375889

Matrix: Air

Associated Lab Samples:

10218903001

Blank Result

Reporting Limit

Analyzed

Qualifiers

Parameter Methane

ppmv

Units

Units

ND

1.0 02/11/13 13:22

LABORATORY CONTROL SAMPLE:

Parameter

1375890

Spike Conc.

Spike

LCS % Rec % Rec Limits

Qualifiers

Methane

ppmv

10

5

7.6

76

84

70-130

LABORATORY CONTROL SAMPLE:

Parameter

1376124

LCS Result

LCS

Result

LCS % Rec % Rec Limits

Qualifiers

Methane

Units Conc. ppmv

4.2

70-130

Date: 02/12/2013 09:49 AM

Page 8 of 10





QUALIFIERS

Project:

WIS-Superior-Former Amoco

Pace Project No.:

10218903

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

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.

ANALYTE QUALIFIERS

A4 Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.





QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

WIS-Superior-Former Amoco

Pace Project No.:

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10218903001	SVE-Winter Street	TO-3 Air	AIR/16747		
10218903002	Passive Air Vent Sample PAV12	TO-3 Air	AIR/16747		
10218903001	SVE-Winter Street	TO-3 Air	AIR/16757		

CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Saint P	aul, MN 55126			-					Addre	ess:	5910	Ric	e Cre	ek P	arkwa	y, Sa	int f	aul, l	Mr	SCENE A	e property	C. Selly	R	egula	tory Ac	ency		使用的现在分
Email To:	gabriel.posteuca@anteagroup.com	Purchase O							Pace	Quote	Refere	nce:									W	iscon	sin Dep	artm	ent of i	latural Re	sources	
Phone:	(651) 697-5190 Fax:	Client Project	t ID: M	IS - Supe	rior -For	mer Am	oco		Pace	Projec	Mana	ger.	Dia	ne A	nders	on			83	0.14	的稳然	aphyr.	NUMBER.	State	/ Loca	tion	14.5	racing Car
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	•			•	SIG	NATURE	of SAMP	LER:	£	7	K	H	L				DAT	E Sign	ed:		1/3	30/201	3		TEMP in	Rece Ice ()	Custo Seale (Y/N)	Samı (Y/N)

Document Revised: 28Jan2013 Document Name: Page 1 of 1 Air Sample Condition Upon Receipt ace Analytical * Document No.: Issuing Authority: Pace Minnesota Quality Office F-MN-A-106-rev.07 Air Sample Condition **Client Name:** Project #: WO#:10218903 **Upon Receipt** Courier: Fed Ex Client UPS USPS Commercial Pace Other: Tracking Number: 6405105 Optional: Proj. Due Date: Proj. Name: Seals Intact? Yes No Custody Seal on Cooler/Box Present? Yes No Dother: Packing franuts Bubble Bags Foam None Packing Material: Bubble Wrap Thermom. Used: B88A912167504 80512447 72337080 Date & Initials of Person Examining Contents: 77 7237080 Temp. (TO17 and TO13 samples only) (°C): _________ Corr Temp should be above freezing to 6°C Correction Factor: _ Corrected Temp (°C): Comments: Chain of Custody Present? Yes □No □N/A Chain of Custody Filled Out? Yes No □N/A Chain of Custody Relinquished? Yes No □N/A 3. Yes □No □N/A 4. Sampler Name and/or Signature on COC? Samples Arrived within Hold Time? ≥Yes No □N/A Short Hold Time Analysis (<72 hr)? ⊠Yes No □N/A Rush Turn Around Time Requested? Yes NNO □N/A Sufficient Volume? XXes □ No □N/A 8. **Correct Containers Used?** ⊠Yes □No □N/A -Pace Containers Used? Yes □No □N/A Containers Intact? Yes No □N/A 10. 11. Wes Sample Labels Match COC? No □N/A Samples Received: Stand Alone G Canisters Flow Controllers Sample Number Sample Number Can ID Sample Number Can ID Can ID

Project Manager Review:

Date: 1/0/15

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)

Date/Time:

CLIENT NOTIFICATION/RESOLUTION
Person Contacted:

Comments/Resolution:

Field Data Required? Yes No





May 24, 2013

Mr. Jonathan Zimdars Antea Group 5910 Rice Creek Pkway #100 Saint Paul, MN 55126

RE: Project: WIS-Superior Former Amoco

Pace Project No.: 10229043

Dear Mr. Zimdars:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Lori Castille

Las Catte

lori.castille@pacelabs.com Project Manager

Enclosures







CERTIFICATIONS

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

Maine Certification #: 2007029

Mississippi Certification #: Pace

Michigan DEQ Certification #: 9909 Minnesota Certification #: 027-053-137

Maryland Certification #: 322

Minnesota Certification IDs 1700 Elm Street SE Suite 200, Minneapolis, MN 55414 A2LA Certification #: 2926.01 Aziaka Certification #: UST-078
Alaska Certification #: UST-078
Alaska Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA Colorado Certification #Pace Connecticut Certification #: PH-0256 EPA Region 8 Certification #: Pace Florida/NELAP Certification #: E87605 Georgia Certification #: 959 Hawaii Certification #Pace Idaho Certification #: MN00064 Illinois Certification #: 200011 Kansas Certification #: E-10167 Louisiana Certification #: 03086 Louisiana Certification #: LA080009

Montana Certification #: MT CERT0092 Nevada Certification #: MN_00064 Nebraska Certification #: Pace New Jersey Certification #: MN-002 New York Certification #: 11647 North Carolina Certification #: 530 North Dakota Certification #: R-036 North Dakota Certification #: R-036A Ohio VAP Certification #: CL101 Oklahoma Certification #: 9507 Oregon Certification #: MN200001 Oregon Certification #: MN300001 Pennsylvania Certification #: 68-00563 Puerto Rico Certification Tennessee Certification #: 02818 Texas Certification #: T104704192 Utah Certification #: MN00064 Virginia/DCLS Certification #: 002521 Virginia/VELAP Certification #: 460163 Washington Certification #: C754 West Virginia Certification #: 382 Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

Page 2 of 10

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SAMPLE SUMMARY

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10229043001	SVE-Winter Street	Air	05/16/13 11:35	05/17/13 09:38
10229043002	Passive Air Vent Sample #12	Air	05/16/13 11:15	05/17/13 09:38

Page 3 of 10

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SAMPLE ANALYTE COUNT

Project:

WIS-Superior Former Amoco

Pace Project No.:

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10229043001	SVE-Winter Street	TO-3 Air	RTP	8
		TO-3 Air	RTP	1
10229043002	Passive Air Vent Sample #12	TO-3 Air	RTP	8
		TO-3 Air	RTP	1





ANALYTICAL RESULTS

Project:

WIS-Superior Former Amoco

Pace Project No.: 10229043

Sample: SVE-Winter Street	Lab ID: 10229043001	Collected: 05/16/13	11:35	Received: 05/	17/13 09:38 N	Matrix: Air	
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO3 GCV AIR BTEX BAG	Analytical Method: TO-3 Ai	r					
Benzene	ND ppmv	0.21	2.1		05/22/13 12:46	71-43-2	
Ethylbenzene	ND ppmv	0.21	2.1		05/22/13 12:46	100-41-4	
Methyl-tert-butyl ether	ND ppmv	0.21	2.1		05/22/13 12:46	1634-04-4	
THC as Gas	ND ppmv	2.1	2.1		05/22/13 12:46		A4
Toluene	ND ppmv	0.21	2.1		05/22/13 12:46	108-88-3	
Xylene (Total)	ND ppmv	0.63	2.1		05/22/13 12:46	1330-20-7	
m&p-Xylene	ND ppmv	0.42	2.1		05/22/13 12:46	179601-23-1	
o-Xylene	ND ppmv	0.21	2.1		05/22/13 12:46	95-47-6	
TO3 GCV AIR Meth, Ethane, Ethene	Analytical Method: TO-3 A	r					
Methane	ND ppmv	1.0	1		05/17/13 10:31	74-82-8	

Date: 05/24/2013 03:49 PM

REPORT OF LABORATORY ANALYSIS

Page 5 of 10

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ANALYTICAL RESULTS

Project:

WIS-Superior Former Amoco

Pace Project No.: 10229043

Sample: Passive Air Vent Sample #12	Lab ID: 1022	29043002	Collected: 05/16/	13 11:15	Received: 0	5/17/13 09:38 N	/atrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO3 GCV AIR BTEX BAG	Analytical Meth	od: TO-3 A	ir					
Benzene	ND ppi	mν	0.28	2.8		05/22/13 10:21	71-43-2	
Ethylbenzene	ND ppi	mv ·	0.28	2.8		05/22/13 10:21	100-41-4	
Methyl-tert-butyl ether	ND ppi	mv	0.28	2.8		05/22/13 10:21	1634-04-4	
THC as Gas	ND pp	mν	2.8	2.8		05/22/13 10:21		A4
Toluene	ND ppi	mν	0.28	2.8		05/22/13 10:21	108-88-3	
Xylene (Total)	ND ppi	mν	0.84	2.8		05/22/13 10:21	1330-20-7	
m&p-Xylene	ND ppi	mv	0.56	2.8		05/22/13 10:21	179601-23-1	
o-Xylene	ND ppi	mν	0.28	2.8		05/22/13 10:21	95-47-6	
TO3 GCV AIR Meth, Ethane, Ethene	Analytical Meth	od: TO-3 A	ir					
Methane	ND ppi	mv	1.0	1		05/17/13 10:41	74-82-8	

Date: 05/24/2013 03:49 PM

REPORT OF LABORATORY ANALYSIS

Page 6 of 10

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QUALITY CONTROL DATA

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

QC Batch:

AIR/17380

Analysis Method:

TO-3 Air

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR BTEX BAG

Associated Lab Samples:

les: 10229043001, 10229043002

METHOD BLANK: 1438062

Matrix: Air

Associated Lab Samples: 10

10229043001, 10229043002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ppmv	ND	0.10	05/22/13 08:58	
Ethylbenzene	ppmv	ND	0.10	05/22/13 08:58	
m&p-Xylene	ppmv	ND	0.20	05/22/13 08:58	
Methyl-tert-butyl ether	ppmv	ND	0.10	05/22/13 08:58	
o-Xylene	ppmv	ND	0.10	05/22/13 08:58	
THC as Gas	ppmv	ND	1.0	05/22/13 08:58	
Toluene	ppmv	ND	0.10	05/22/13 08:58	
Xylene (Total)	ppmv	ND	0.30	05/22/13 08:58	
a,a,a-Trifluorotoluene (S)	%	95	30-150	05/22/13 08:58	

LABORATORY CONTROL SAM	PLE & LCSD: 143806	3	14	38064	•					
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ppmv	1	0.94	0.80	94	80	70-130	15	30	
Ethylbenzene	ppmv	1	0.87	0.75	87	75	70-130	15	30	
m&p-Xylene	ppmv	2	1.7	1.5	87	75	70-130	15	30	
Methyl-tert-butyl ether	ppmv	1	1.0	0.89	102	89	70-130	15	30	
o-Xylene	ppmv	1	0.85	0.74	85	74	70-130	14	30	
THC as Gas	ppmv	10	9.9	8.6	99	86	70-130	14	30	
Toluene	ppmv	1	0.91	0.77	91	77	70-130	16	30	
Xylene (Total)	ppmv	3	2.6	2.2	86	74	70-130	15	30	
a,a,a-Trifluorotoluene (S)	%				86	90	30-150			

Date: 05/24/2013 03:49 PM





QUALITY CONTROL DATA

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

QC Batch:

AIR/17383

Analysis Method:

TO-3 Air

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR METH, ETHANE, ETHENE

Associated Lab Samples:

10229043001, 10229043002

Matrix: Air

METHOD BLANK: 1438198 Associated Lab Samples:

10229043001, 10229043002

Blank Result Reporting

Parameter

Units

Limit

1438200

Analyzed

Qualifiers

Methane

ppmv

ND

1.0 05/17/13 07:13

LABORATORY CONTROL SAMPLE & LCSD: Parameter Units

Spike Conc.

LCS Result

LCSD Result

LCS LCSD % Rec % Rec 83

% Rec Limits

RPD

Max RPD Qualifiers

Methane

ppmv

5

4.6

4.1 92 70-130

11 30

Date: 05/24/2013 03:49 PM

REPORT OF LABORATORY ANALYSIS

Page 8 of 10

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Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414 (612)607-1700

QUALIFIERS

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

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.

ANALYTE QUALIFIERS

A4 Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.

Date: 05/24/2013 03:49 PM

Page 9 of 10





QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

WIS-Superior Former Amoco

Pace Project No.:

10229043

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10229043001 10229043002	SVE-Winter Street Passive Air Vent Sample #12	TO-3 Air TO-3 Air	AIR/17380 AIR/17380		
10229043001 10229043002	SVE-Winter Street Passive Air Vent Sample #12	TO-3 Air TO-3 Air	AIR/17383 AIR/17383		

Date: 05/24/2013 03:49 PM

REPORT OF LABORATORY ANALYSIS

Page 10 of 10

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CHAIN-OF-CUSTODY / Analytical Request Document 1029043 The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Chain of Custody Filled Ou	t?	⊠yes	□No □	N/A 2.					
Chain of Custody Relinquis	hed?	⊠Yes	□No® □	N/A 3.					
Sampler Name and/or Sign	nature on COC?	⊠yes	NATIONAL DESCRIPTION OF THE PROPERTY OF THE PR	N/A 4.					
Samples Arrived within Ho	ld Time?	∑Yes	The second secon	N/A 5.					
Short Hold Time Analysis	(<72 hr)?	₩ves	72.72	N/A 6.					
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Sufficient Volume?		Yes		N/A 8.					
Correct Containers Used?		Yes		N/A 9.					
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August 23, 2013

Mr. Jonathan Zimdars Antea Group 5910 Rice Creek Pkway #100 Saint Paul, MN 55126

RE: Project: WIS Superior Former Amoco

Pace Project No.: 10238921

Dear Mr. Zimdars:

Enclosed are the analytical results for sample(s) received by the laboratory on August 16, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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,

Lori Castille

Landesta

lori.castille@pacelabs.com Project Manager

Enclosures







CERTIFICATIONS

Project:

WIS Superior Former Amoco

Pace Project No.: 10238921

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01 Alaska Certification #: UST-078 Alaska Certification #MN00064 Arizona Certification #: AZ-0014 Arkansas Certification #: 88-0680 California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256 EPA Region 8 Certification #: Pace Florida/NELAP Certification #: E87605

Georgia Certification #: 959 Hawaii Certification #Pace Idaho Certification #: MN00064 Illinois Certification #: 200011

Kansas Certification #: E-10167 Louisiana Certification #: 03086 Louisiana Certification #: LA080009 Maine Certification #: 2007029

Maryland Certification #: 322 Michigan DEQ Certification #: 9909 Minnesota Certification #: 027-053-137 Mississippi Certification #: Pace Montana Certification #: MT CERT0092 Nebraska Certification #: Pace

Nevada Certification #: MN_00064 New Jersey Certification #: MN-002 New York Certification #: 11647 North Carolina Certification #: 530

North Dakota Certification #: R-036 Ohio VAP Certification #: CL101 Oklahoma Certification #: 9507 Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563 Puerto Rico Certification Tennessee Certification #: 02818 Texas Certification #: T104704192 Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521 Virginia/VELAP Certification #: 460163 Washington Certification #: C754 West Virginia Certification #: 382 Wisconsin Certification #: 999407970





SAMPLE SUMMARY

Project:

WIS Superior Former Amoco

Pace Project No.:

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10238921001	SVE-Winter Street	Air	08/15/13 14:05	08/16/13 13:02
10238921002	Passive Air Vent Sample-PAV 12	Air	08/15/13 11:25	08/16/13 13:02





SAMPLE ANALYTE COUNT

Project:

WIS Superior Former Amoco

Pace Project No.:

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10238921001	SVE-Winter Street	TO-3 Air	DL1	8
		TO-3 Air	DL1	1
10238921002	Passive Air Vent Sample-PAV 12	TO-3 Air	DL1	8



ANALYTICAL RESULTS

Project:

WIS Superior Former Amoco

Pace Project No.:

Sample: SVE-Winter Street	Lab ID: 10238921001	Collected: 08/15/1	3 14:05	Received: 08/16/13 13	:02 Matrix: Air	
Parameters	Results Units	Report Limit	DF	Prepared Analy	zed CAS No.	Qual
TO3 GCV AIR BTEX BAG	Analytical Method: TO-3	Air				
Benzene	0.34 ppmv	0.10	1	08/16/13	14:19 71-43-2	
Ethylbenzene	ND ppmv	0.10	1	08/16/13	14:19 100-41-4	
Methyl-tert-butyl ether	0.24 ppmv	0.10	1	08/16/13	14:19 1634-04-4	
THC as Gas	15.8 ppmv	1.0	1	08/16/13	14:19	
Toluene	ND ppmv	0.10	1	08/16/13	14:19 108-88-3	
Xylene (Total)	ND ppmv	0.30	1	08/16/13	14:19 1330-20-7	
m&p-Xylene	ND ppmv	0.20	1	08/16/13	14:19 179601-23-1	
o-Xylene	ND ppmv	0.10	1	08/16/13	14:19 95-47-6	
TO3 GCV AIR Meth, Ethane, Ethene	Analytical Method: TO-3	Air				
Methane	1450 ppmv	161	161	08/21/13	16:39 74-82-8	A4



ANALYTICAL RESULTS

Project:

WIS Superior Former Amoco

Pace Project No.:

Sample: Passive Air Vent Sample- PAV 12	Lab ID: 102	238921002	Collected: 08/15/1	13 11:25	Received: 0	8/16/13 13:02	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO3 GCV AIR BTEX BAG	Analytical Met	thod: TO-3 Air				•		
Benzene	ND p	pmv	0.10	1		08/16/13 14:35	71-43-2	
Ethylbenzene	ND p	pmv	0.10	1		08/16/13 14:35	100-41-4	
Methyl-tert-butyl ether	ND p	omv	0.10	1		08/16/13 14:35	1634-04-4	
THC as Gas	1.1 p	omv	1.0	1		08/16/13 14:35	;	
Toluene	ND p	omv	0.10	1		08/16/13 14:35	108-88-3	
Xylene (Total)	ND pr	omv	0.30	1		08/16/13 14:35	1330-20-7	
m&p-Xylene	ND p	omv	0.20	1		08/16/13 14:35	179601-23-1	
o-Xylene	ND pr		0.10	1		08/16/13 14:35	95-47-6	



QUALITY CONTROL DATA

Project:

WIS Superior Former Amoco

Pace Project No.:

10238921

QC Batch:

Benzene Ethylbenzene m&p-Xylene Methyl-tert-butyl ether

o-Xylene THC as Gas Toluene Xylene (Total) AIR/18021

Analysis Method:

TO-3 Air

30-150 08/16/13 09:40

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR BTEX BAG

Associated Lab Samples:

Parameter

10238921001, 10238921002

Matrix: Air

109

METHOD BLANK: 1504153 Associated Lab Samples:

a,a,a-Trifluorotoluene (S)

10238921001, 10238921002

Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
 ppmv	ND	0.10	08/16/13 09:40	
ppmv	ND	0.10	08/16/13 09:40	
ppmv	ND	0.20	08/16/13 09:40	
ppmv	ND	0.10	08/16/13 09:40	
ppmv	ND	0.10	08/16/13 09:40	
ppmv	ND	1.0	08/16/13 09:40	
ppmv	ND	0.10	08/16/13 09:40	
ppmv	ND	0.30	08/16/13 09:40	

LABORATORY CONTROL SAM	IPLE & LCSD: 1504154		15	504155				-		
Parameter	Units	Spīke Сопс.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ppmv	1	0.98	0.94	98	94	70-130	4	30	****
Ethylbenzene	ppmv	1	0.98	0.93	98	93	70-130	5	30	
m&p-Xylene	ppmv	2	1.9	1.9	97	93	70-130	4	30	
Methyl-tert-butyl ether	ppmv	1	1.1	1.0	105	101	70-130	4	30	
o-Xylene	ppmv	1	0.96	0.92	96	92	70-130	5	30	
THC as Gas	ppmv	10	10.3	9.7	103	97	70-130	5	30	
Toluene	ppmv	1	0.99	0.94	99	94	70-130	4	30	
Xylene (Total)	ppmv	3	2.9	2.8	96	92	70-130	4	30	
a,a,a-Trifluorotoluene (S)	%				99	101	30-150			





QUALITY CONTROL DATA

Project:

WIS Superior Former Amoco

Pace Project No.:

10238921

QC Batch:

AIR/18061

Analysis Method:

TO-3 Air

QC Batch Method:

TO-3 Air

Analysis Description:

TO3 GCV AIR METH, ETHANE, ETHENE

Associated Lab Samples:

les: 10238921001

Matrix: Air

METHOD BLANK: 1507784
Associated Lab Samples: 1

10238921001

Result

Date: 08/23/2013 02:08 PM

Parameter

Blank Re

Reporting Limit

Analyzed

Qualifiers

Methane

ppmv

Units

ND -

1.0 08/21/13 16:07

LABORATORY CONTROL SAMPLE & LCSD: 1507786 1507785 LCS LCSD LCS LCSD % Rec Spike Max Parameter % Rec % Rec Limits RPD RPD Units Conc. Result Result Qualifiers Methane ppmv 5 4.4 4.3 89 85 70-130 30



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414 (612)607-1700

QUALIFIERS

Project:

WIS Superior Former Amoco

Pace Project No.:

10238921

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

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.

ANALYTE QUALIFIERS

Date: 08/23/2013 02:08 PM

A4 Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.





QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

WIS Superior Former Amoco

Pace Project No.:

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10238921001	SVE-Winter Street	TO-3 Air	AIR/18021		
10238921002	Passive Air Vent Sample-PAV 12	TO-3 Air	AIR/18021		
10238921001	SVE-Winter Street	TO-3 Air	AIR/18061		



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section		Section B								Sec	tion (C											10	24	20	' [-	-	100		-
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Phone:	ionathan.zimdars@anteagroup.com (651) 697-5219 Fax:	Client Proje			S Cuno	rior For	nor Am		_	_			Manag				_						260 100	Wis	consi					sources	
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×	Sample lds must be unique Tissue	TS	MATRIX CODE	SAMPLE TYPE					PE	8	Ses	H2S04	3	2 2	Na2S203	Methanol	10	, Lua	E.	THC TO-3	Methane TO-3		-					Residual			
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Pace Analytical*

Document Name:
Air Sample Condition Upon Receipt
Document No.:

Document Revised: 28Jan2013
Page 1 of 1
Issuing Authority:
Page Minnesota Quality Office

			F-MN-A-10	06-rev.07		Pace Minnesota Quality C	Office
r Sample Condition Upon Receipt	Client Name:			Project #	″	1023892	1
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Courier:	Fed Ex UPS	USPS		lent			
	☐Commercial ☐Pace	Other:			10238921	1101	
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ustody Seal on Cool	er/Box Present? Yes	ØN∘	Seals In	tact?	Yes No	Optional: Proj. Due Date:	Proj. Name:
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emp. (TO17 and TO13 s emp should be above i	freezing to 6°C Correction Fac		p (°C):			B88A912167504 B805	12447 172337080 26/6/13
						Comments:	
Chain of Custody Pres	sent?	Yes	No	□N/A	1.	The state of the s	
Chain of Custody Fille	ed Out?	Yes	□No	□N/A	2.		
Chain of Custody Reli	nquished?	∑ves	□No	□N/A	3.		
Sampler Name and/o	r Signature on COC?	≥yes	□No	□N/A	4.		
Samples Arrived with	In Hold Time?	Yes	□No	□N/A	5.		
Short Hold Time Ana	lysis (<72 hr)?	Yes	No	□N/A	6.		T
Rush Turn Around Tie	me Requested?	Yes	No	□N/A	7.		
Sufficient Volume?	<u> </u>	Yes	□No	N/A	8.		
Correct Containers Us	sed?	⊠Yes	□No	□N/A	9.		
-Pace Containers L	Jsed?	Yes	No	□N/A	, a .	· · · · · · · · · · · · · · · · · · ·	
Containers Intact?		Yes	□No	□N/A	10.		
Media: 2	5ag5				11.		
Sample Labels Match	COC?	Yes	□No	□N/A	12.		
Samples Received:							
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* 1		7.1					
IENT NOTIFICATION	N/RESOLUTION					Field Data Required?	□Yes □No
	ontacted:				Date/Time:		
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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)