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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.



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

c: Ms. Erin Endsley, WDNR
Mr. Jay Thompson, Lake City Towing

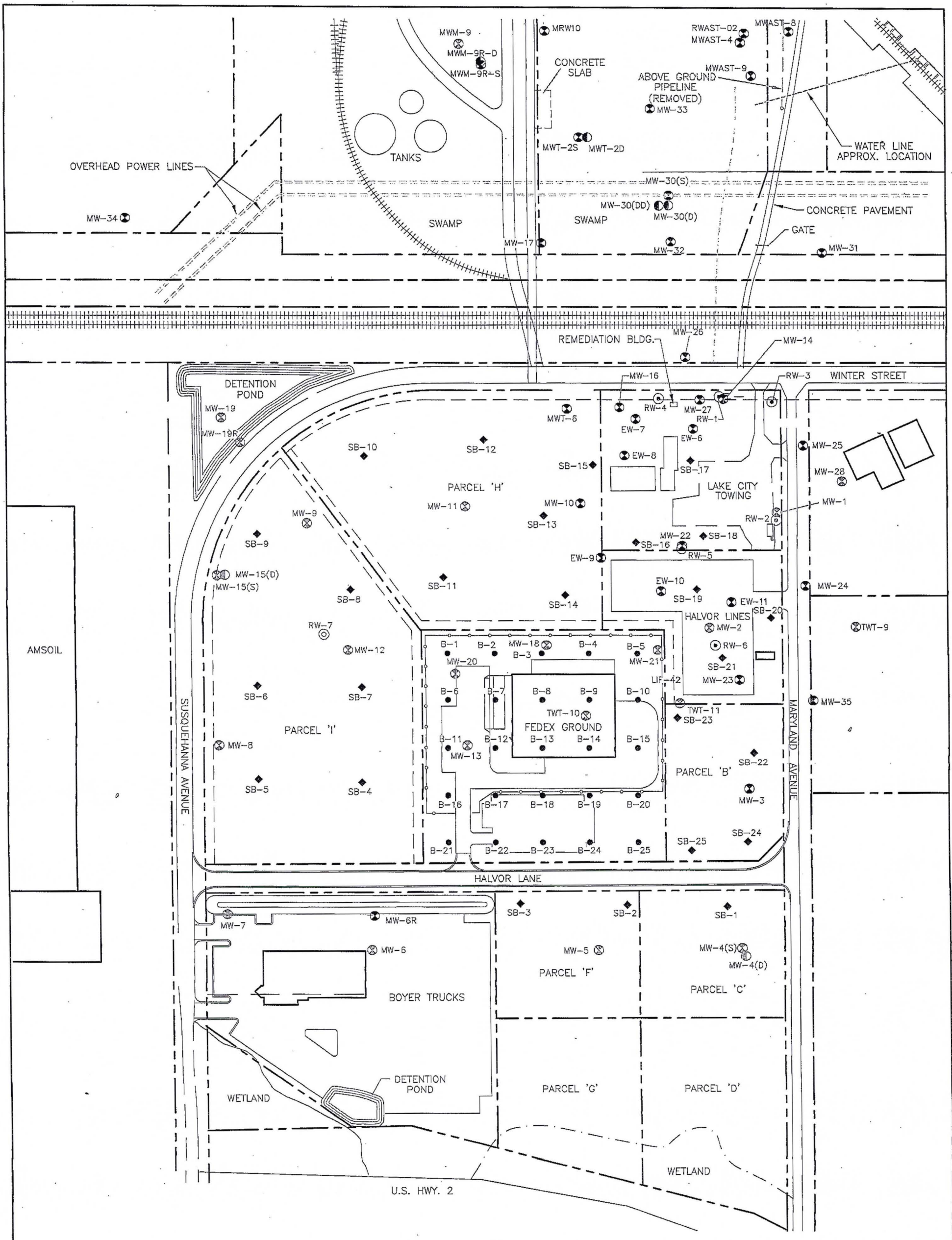
Enclosures: Figure 1 – Former Terminal Map
Table 1 – SVE Emission Summary (SVE-only system)
Pace Analytical Reports: 10218903, 10229043, 10238921

Table 1
SVE Emission Summary
 SVE-only System
 Former Amoco Superior Terminal No. 406
 2904 Winter Street, Superior, Wisconsin

Date	Exhaust Flow (acfm)	Temperature (° F)	Exhaust Flow (scfm)	Period Hours (hours)	Cumulative Hours (hours)	Exhaust THC (ppmv)	Exhaust Benzene (ppmv)	THC Emissions (lbs/hr)	Cumulative Annual Benzene (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:

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



LEGEND:

- ⊗ MONITORING WELL LOCATION
- ⊗ ABANDONED MONITORING WELL LOCATION
- ⊕ DEEP MONITORING WELL LOCATIONS
- ⊕ ABANDONED MONITORING WELL LOCATION
- ⊙ RECOVERY WELL LOCATION
- ⊙ ABANDONED RECOVERY WELL LOCATION
- SOIL SAMPLING LOCATION
- ◆ HAND AUGER SAMPLING LOCATION
- ++++ RAILROAD TRACKS
- x-x-x- FENCE LINE
- - - - - APPROXIMATE PROPERTY LINE

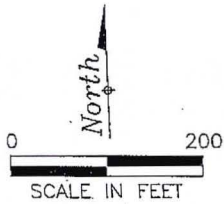


Figure 1

**FORMER AMOCO TERMINAL
SUPERIOR, WISCONSIN**

PROJECT NO. WISUPERIOR	PREPARED BY JZ	DRAWN BY .DD
DATE 11/06/13	REVIEWED BY	FILE NAME Superior-Sur2





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

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

diane.anderson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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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
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

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

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

SAMPLE SUMMARY

Project: WIS-Superior-Former Amoco
Pace Project No.: 10218903

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

REPORT OF LABORATORY ANALYSIS

Page 3 of 10

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SAMPLE ANALYTE COUNT

Project: WIS-Superior-Former Amoco
Pace Project No.: 10218903

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

REPORT OF LABORATORY ANALYSIS

Page 4 of 10

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ANALYTICAL RESULTS

Project: WIS-Superior-Former Amoco
Pace Project No.: 10218903

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 11:11	71-43-2	
Ethylbenzene	ND	ppmv	0.25	2.52		02/07/13 11:11	100-41-4	
Methyl-tert-butyl ether	ND	ppmv	0.25	2.52		02/07/13 11:11	1634-04-4	A4
THC as Gas	8.3	ppmv	2.5	2.52		02/07/13 11:11		
Toluene	ND	ppmv	0.25	2.52		02/07/13 11:11	108-88-3	
Xylene (Total)	ND	ppmv	0.76	2.52		02/07/13 11:11	1330-20-7	
m&p-Xylene	ND	ppmv	0.50	2.52		02/07/13 11:11	179601-23-1	
o-Xylene	ND	ppmv	0.25	2.52		02/07/13 11:11	95-47-6	
TO3 GCV AIR Meth,Ethane,Ethene	Analytical Method: TO-3 Air							
Methane	500	ppmv	50.4	50.4		02/11/13 13:42	74-82-8	A4



ANALYTICAL RESULTS

Project: WIS-Superior-Former Amoco
 Pace Project No.: 10218903

Sample: Passive Air Vent Sample PAV12 Lab ID: 10218903002 Collected: 01/30/13 14:35 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 11:24	71-43-2	
Ethylbenzene	ND	ppmv	0.25	2.52		02/07/13 11:24	100-41-4	
Methyl-tert-butyl ether	ND	ppmv	0.25	2.52		02/07/13 11:24	1634-04-4	A4
THC as Gas	ND	ppmv	2.5	2.52		02/07/13 11:24		
Toluene	ND	ppmv	0.25	2.52		02/07/13 11:24	108-88-3	
Xylene (Total)	ND	ppmv	0.76	2.52		02/07/13 11:24	1330-20-7	
m&p-Xylene	ND	ppmv	0.50	2.52		02/07/13 11:24	179601-23-1	
o-Xylene	ND	ppmv	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: 10218903001, 10218903002

METHOD BLANK: 1374359 Matrix: Air
 Associated Lab Samples: 10218903001, 10218903002

Parameter	Units	Blank Result	Reporting 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 SAMPLE & LCSD: 1374360		1374361								
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
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: 10218903001

METHOD BLANK: 1375889 Matrix: Air
Associated Lab Samples: 10218903001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ppmv	ND	1.0	02/11/13 13:22	

LABORATORY CONTROL SAMPLE: 1375890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methane	ppmv	10	7.6	76	70-130	

LABORATORY CONTROL SAMPLE: 1376124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methane	ppmv	5	4.2	84	70-130	

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.: 10218903

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.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		(021590) Page: 1 Of 1	
Company: Antea Group		Report To: Clarence Bieze		Attention: Clarence Bieze			
Address: 5910 Rice Creek Parkway		Copy To:		Company Name: Antea Group			
Saint Paul, MN 55126				Address: 5910 Rice Creek Parkway, Saint Paul, MN		Regulatory Agency:	
Email To: gabriel.posteuca@anteagroup.com		Purchase Order No.:		Pace Quote Reference:		Wisconsin Department of Natural Resources	
Phone: (651) 697-5190 Fax:		Client Project ID: WIS - Superior -Former Amoco		Pace Project Manager: Diane Anderson		State / Location	
Requested Due Date/TAT: 10 Day (Default)		Container Order Number:		Pace Profile #:		Wisconsin	

ITEM#	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample IDs must be unique	MATRIX	CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analyses: Test Y/N	Requested Analysis Filtered (Y/N)			Residual Chlorine (Y/N)	
						START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O8	Methanol		Other	BTEX TO-3	THC TO-3		Methane TO-3
						DATE	TIME	DATE	TIME															
1	SVE - Winter Street	AR	G		G	1/30/2013	15:20			1	X							X	X	X				
2	Passive Air Vent Sample (PAV#12)	AR	G		G	1/30/2013	14:35			1	X							X	X				PAV#12	
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Ed Heytens	1/30/2013	16:00	<i>Ed Heytens</i>	1/30/13	12:00	PAV#12

SAMPLER NAME AND SIGNATURE		TEMP in C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: Ed Heytens					
SIGNATURE of SAMPLER: <i>Ed Heytens</i>	DATE Signed: 1/30/2013				



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

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

lori.castille@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: WIS-Superior Former Amoco
Pace Project No.: 10229043

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
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

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

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: WIS-Superior Former Amoco
Pace Project No.: 10229043

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

REPORT OF LABORATORY ANALYSIS

Page 4 of 10

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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	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	0.21	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 Air						
Methane	ND	ppmv	1.0	1		05/17/13 10:31	74-82-8	

ANALYTICAL RESULTS

Project: WIS-Superior Former Amoco
Pace Project No.: 10229043

Sample: Passive Air Vent Sample #12 Lab ID: 10229043002 Collected: 05/16/13 11:15 Received: 05/17/13 09:38 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	0.28	2.8		05/22/13 10:21	71-43-2	
Ethylbenzene	ND	ppmv	0.28	2.8		05/22/13 10:21	100-41-4	
Methyl-tert-butyl ether	ND	ppmv	0.28	2.8		05/22/13 10:21	1634-04-4	
THC as Gas	ND	ppmv	2.8	2.8		05/22/13 10:21		A4
Toluene	ND	ppmv	0.28	2.8		05/22/13 10:21	108-88-3	
Xylene (Total)	ND	ppmv	0.84	2.8		05/22/13 10:21	1330-20-7	
m&p-Xylene	ND	ppmv	0.56	2.8		05/22/13 10:21	179601-23-1	
o-Xylene	ND	ppmv	0.28	2.8		05/22/13 10:21	95-47-6	
TO3 GCV AIR Meth,Ethane,Ethene		Analytical Method: TO-3 Air						
Methane	ND	ppmv	1.0	1		05/17/13 10:41	74-82-8	



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: 10229043001, 10229043002

METHOD BLANK: 1438062 Matrix: Air
 Associated Lab Samples: 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	

Parameter	Units	1438063		1438064		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCS Result	LCSD Result						
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				

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

METHOD BLANK: 1438198 Matrix: Air
Associated Lab Samples: 10229043001, 10229043002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ppmv	ND	1.0	05/17/13 07:13	

LABORATORY CONTROL SAMPLE & LCSD: 1438199 1438200

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ppmv	5	4.6	4.1	92	83	70-130	11	30	

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.

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	SVE-Winter Street	TO-3 Air	AIR/17380		
10229043002	Passive Air Vent Sample #12	TO-3 Air	AIR/17380		
10229043001	SVE-Winter Street	TO-3 Air	AIR/17383		
10229043002	Passive Air Vent Sample #12	TO-3 Air	AIR/17383		



CHAIN-OF-CUSTODY / Analytical Request Document 10229043

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	Page: 1 Of 1
Company: Antea Group	Report To: Jonathan Zimdars	Attention: Jonathan Zimdars	
Address: 5910 Rice Creek Parkway	Copy To:	Company Name: Antea Group	
Saint Paul, MN 55126		Address: 5910 Rice Creek Parkway, Saint Paul, MN	Regulatory Agency
Email To: jonathan.zimdars@anteagroup.com	Purchase Order No.	Pace Quote Reference:	Wisconsin Department of Natural Resources
Phone: (651) 697-5219 Fax:	Client Project ID: WIS - Superior -Former Amoco	Pace Project Manager:	State / Location
Requested Due Date/TAT: 10 Day (Default)	Container Order Number:	Pace Profile #:	Wisconsin

ITEM#	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	CODE DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Y/N	Requested Analysis Filtered (Y/N)			Residual Chlorine (Y/N)		
						START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2SO3	Methanol		Other	Analyses Test	BTEX TO-3		THC TO-3	Methane TO-3
						DATE	TIME	DATE	TIME																
1	SVE - Winter Street			AR	G	5/16/2013	11:35			1	X								X	X	X				
2	Passive Air Vent Sample #12			AR	G	5/16/2013	11:15			1	X								X	X		PAV#12 (2.8)			
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Ed Heytens	5/16/2013	11:50	<i>[Signature]</i>	5/16/13	11:50	N
	<i>[Signature]</i>	5/16/13	1:00	<i>[Signature]</i>	5/17/13	09:35	N

SAMPLER NAME AND SIGNATURE		TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: Ed Heytens					
SIGNATURE of SAMPLER: <i>[Signature]</i>	DATE Signed: 5/16/2013				



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

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

lori.castille@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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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

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SAMPLE SUMMARY

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

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

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SAMPLE ANALYTE COUNT

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

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

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ANALYTICAL RESULTS

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

Sample: SVE-Winter Street	Lab ID: 10238921001	Collected: 08/15/13 14:05	Received: 08/16/13 13:02	Matrix: Air				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	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

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

ANALYTICAL RESULTS

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

Sample: Passive Air Vent Sample- PAV 12 Lab ID: 10238921002 Collected: 08/15/13 11:25 Received: 08/16/13 13:02 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	0.10	1		08/16/13 14:35	71-43-2	
Ethylbenzene	ND	ppmv	0.10	1		08/16/13 14:35	100-41-4	
Methyl-tert-butyl ether	ND	ppmv	0.10	1		08/16/13 14:35	1634-04-4	
THC as Gas	1.1	ppmv	1.0	1		08/16/13 14:35		
Toluene	ND	ppmv	0.10	1		08/16/13 14:35	108-88-3	
Xylene (Total)	ND	ppmv	0.30	1		08/16/13 14:35	1330-20-7	
m&p-Xylene	ND	ppmv	0.20	1		08/16/13 14:35	179601-23-1	
o-Xylene	ND	ppmv	0.10	1		08/16/13 14:35	95-47-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

QC Batch: AIR/18021 Analysis Method: TO-3 Air
QC Batch Method: TO-3 Air Analysis Description: TO3 GCV AIR BTEX BAG
Associated Lab Samples: 10238921001, 10238921002

METHOD BLANK: 1504153 Matrix: Air
Associated Lab Samples: 10238921001, 10238921002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ppmv	ND	0.10	08/16/13 09:40	
Ethylbenzene	ppmv	ND	0.10	08/16/13 09:40	
m&p-Xylene	ppmv	ND	0.20	08/16/13 09:40	
Methyl-tert-butyl ether	ppmv	ND	0.10	08/16/13 09:40	
o-Xylene	ppmv	ND	0.10	08/16/13 09:40	
THC as Gas	ppmv	ND	1.0	08/16/13 09:40	
Toluene	ppmv	ND	0.10	08/16/13 09:40	
Xylene (Total)	ppmv	ND	0.30	08/16/13 09:40	
a,a,a-Trifluorotoluene (S)	%	109	30-150	08/16/13 09:40	

Parameter	Units	Spike Conc.	1504154		1504155		% Rec Limits	RPD	Max RPD	Qualifiers
			LCS Result	LCSD Result	LCS % Rec	LCSD % Rec				
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			

REPORT OF LABORATORY ANALYSIS

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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: 10238921001

METHOD BLANK: 1507784 Matrix: Air
Associated Lab Samples: 10238921001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ppmv	ND	1.0	08/21/13 16:07	

Parameter	Units	LABORATORY CONTROL SAMPLE & LCSD: 1507785 1507786								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ppmv	5	4.4	4.3	89	85	70-130	4	30	

REPORT OF LABORATORY ANALYSIS

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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

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WIS Superior Former Amoco
Pace Project No.: 10238921

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		

REPORT OF LABORATORY ANALYSIS

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