June 1, 2018

Mr. Craig Zeller, P.E.
U.S. EPA, Region 4
Remedial Project Manager
61 Forsyth Street, S.W.
Atlanta, Georgia 30303
zeller.craig@epa.gov

Subject: **Interim Remedial Action Objective Values Technical Memorandum**
CTS of Asheville, Inc. Superfund Site
235 Mills Gap Road, Asheville, Buncombe County, North Carolina
EPA ID: NCD003149556
Consent Decree – Civil Action No. 1:16-cv-380
Amec Foster Wheeler Project 6252-16-2012

Dear Mr. Zeller:

As described in the CTS of Asheville, Inc. Superfund Site Remedial Design Work Plan, dated April 19, 2017, the interim remedial action objective (RAO) for the electrical resistance heating (ERH) Treatment Area is 95 percent removal of trichloroethene (TCE) from soil, groundwater, and light non-aqueous phase liquid (LNAPL). This technical memorandum describes the calculated interim RAO values for the ERH remediation at the CTS of Asheville, Inc. Superfund Site (Site). Amec Foster Wheeler Environment & Infrastructure, Inc. prepared this Technical Memorandum on behalf of CTS Corporation to comply with the *Consent Decree for Interim Remedial Design/Remedial Action at the CTS of Asheville, Inc. Superfund Site* between the United States of America and CTS Corporation, Mills Gap Road Associates, and Northrop Grumman Systems Corporation (entered on March 7, 2017).

Background

A Technical Memorandum concerning the RAO (RAO Tech Memo) was submitted to USEPA on September 13, 2017. The RAO Tech Memo presented the methodology for determining successful achievement of the RAO. The RAO Tech Memo proposed using a 'population of data' approach, where the arithmetic average TCE concentration for each media in the ERH Treatment Area would be determined from baseline samples, and 5 percent of the arithmetic average TCE concentration would be calculated for each media (i.e., 95 percent TCE removal). These concentrations would become the target average concentration for each media in the Treatment Area. The proposed RAO determination method was approved by United States Environmental Protection Agency (USEPA) in email correspondence dated October 11, 2017.

An ERH Remedial Action Work Plan (RAWP), dated January 17, 2018, describes the sampling procedures for the collection/analysis of soil, groundwater, and LNAPL samples to be used in the calculation of the interim RAO. The RAWP was approved by USEPA on February 16, 2018. Based on the shallow depth to bedrock in a portion of the Site, as

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Asheville, North Carolina 28806
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determined during installation of ERH electrodes, two of the proposed 'deep' monitoring wells (MW-27A and MW-32A) could not be installed and the proposed locations of several monitoring wells were modified due to Site conditions. An ERH Performance Monitoring Well Construction Modifications Technical Memorandum was submitted to USEPA on February 20, 2018, describing the monitoring well modifications to the RAWP. USEPA provided approval of the monitoring well modifications on February 23, 2018.

Interim RAO Determination

The following sections describe sample collection procedures and results used for determination of the interim RAO values. A summary of the collected samples is included in Table 1, and the sample locations are depicted in Figure 1.

Saturated Soil

Between March 6 and 12, 2018, 39 soil samples were collected from varying depths at 15 locations in the ERH Treatment Area. Soil boring logs are attached (Attachment 1). The soil samples were analyzed for TCE according to USEPA Method 8260. The laboratory report is attached (Attachment 2) and the results are summarized in Table 2 and Figure 2. Data validation was completed using project objectives described in the RAWP Quality Assurance Project Plan (QAPP) and USEPA Region 4 guidelines. A summary of the data validation process and findings is presented in Attachment 3.

One of the soil samples, SS-119-28, was collected from the designated elevation/depth, as described in the RAWP. During continued field work, the water table was determined to be below the elevation of this soil sample location. Because soil sample SS-119-28 was collected from the unsaturated zone, the analytical result of the sample was not used in the calculation of the interim RAO for saturated soil in the ERH Treatment Area.

TCE concentrations in the saturated soil samples ranged from 7.2 micrograms per kilogram (µg/kg) to 741,000 µg/kg. Four duplicate soil samples were collected. Using the average concentration of a parent and duplicate pair, the average TCE concentration for the dataset is 59,496 µg/kg. The resulting calculated saturated soil interim RAO, which is 5 percent of the average TCE concentration, is 2,975 µg/kg.

Groundwater

Between February 20 and March 23, 2018, 18 new stainless-steel groundwater monitoring wells were installed in the ERH Treatment Area. The depths to groundwater in the new monitoring wells, and existing stainless-steel groundwater monitoring wells MW-2 and MW-3, were measured on March 28, 2018. These monitoring wells were designated in the RAWP and ERH Performance Monitoring Well Construction Modifications Technical Memorandum for evaluating performance of the ERH interim remedial action. Well construction details and depth to groundwater measurements are summarized in Table 3.

Groundwater samples were collected from the 20 performance monitoring wells between March 29 and April 4, 2018. Except for monitoring wells MW-31 and MW-32, the depth to groundwater was sufficiently shallow to collect groundwater via low-flow purging/sampling using a peristaltic pump. Groundwater samples from monitoring wells MW-31 and MW-32 were collected using new clean polyethylene bailers after purging at least three well volumes. Water quality parameters (temperature, pH, conductivity, dissolved oxygen, oxidation reduction potential, and turbidity) were measured during purging. Copies of the groundwater sampling field data records are attached (Attachment 4).

The groundwater samples were submitted for analysis of TCE according to USEPA Method 8260. The laboratory report is attached (Attachment 5) and the results are summarized in Table 4 and Figure 3. Data validation was completed using project objectives described in the RAWP QAPP and USEPA Region 4 guidelines. A summary of the data validation process and findings is presented in Attachment 6.

TCE concentrations in the groundwater samples ranged from 772 micrograms per liter (µg/L) to 51,300 µg/L. Two duplicate groundwater samples were collected. Using the average concentration from a parent and duplicate pair, the average TCE concentration for the dataset is 16,523 µg/L. The resulting calculated interim groundwater RAO, which is 5 percent of the average TCE concentration, is 826 µg/L.

LNAPL

The 20 performance monitoring wells in the ERH Treatment Area were gauged for LNAPL on March 28, 2018. Performance monitoring well MW-3 contained 0.06 feet of LNAPL, while measurable LNAPL was not detected in the remaining performance monitoring wells. Due to the lack of sufficient LNAPL for sample collection in the groundwater performance wells, monitoring wells MW-12, MW-13, and MW-14, which are also located in the ERH Treatment Area, were gauged for LNAPL. These three monitoring wells are not groundwater performance wells due to their relatively long well screens (i.e., approximately 30 to 35 feet in length); however, these monitoring wells are appropriate for gauging of LNAPL for ERH interim remedial action performance purposes. LNAPL was not measured in MW-13, but LNAPL was measured in MW-12 (4.88 feet) and MW-14 (0.81 feet).

Based on the above gauging of LNAPL in the monitoring wells in the ERH Treatment Area, LNAPL samples were collected from MW-12 and MW-14 on April 3, 2018. The LNAPL samples were submitted for analysis of TCE according to USEPA Method 8260. The laboratory report is attached (Attachment 5) and the results are summarized in Table 5 and Figure 3. Data validation was completed using project objectives described in the RAWP QAPP and USEPA Region 4 guidelines. A summary of the data validation process and findings is presented in Attachment 6.

TCE concentrations in the LNAPL samples ranged from 6,270 milligrams per kilogram (mg/kg) to 10,200 mg/kg. One duplicate LNAPL sample was collected. Using the average concentration from the parent and duplicate pair, the average TCE concentration for the dataset is 8,080 mg/kg. The resulting calculated interim LNAPL RAO, which is 5 percent of the average TCE concentration, is 404 mg/kg.

Calculated Interim RAO Values

The calculated interim RAO values are summarized in the following table:

Media	Interim RAO TCE Concentration
Saturated soil	2,975 µg/kg
Groundwater	826 µg/L
LNAPL	404 mg/kg

Closing

If you have questions regarding this Technical Memorandum, please contact us at (828) 252-8130.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.

Susan E. Avritt, P.E., L.G.
Senior Engineer

Matthew E. Wallace, P.E.
Principal Engineer

SEA/MEW:sea

cc: George Lytwynyshyn, CTS Corporation
Andrew Warren, CTS Corporation
Jane Story, Jones Day
Beth Hartzell, NCDEQ
Kurt Batsel, Northrop Grumman
Michael Shannon, Northrop Grumman
William Clarke, Roberts & Stevens, P.A

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3 Soil Data Validation Report
4 Groundwater Sampling Field Data Records
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6 Groundwater and LNAPL Data Validation Report

TABLES

TABLE 1
ERH Baseline Sampling: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	Associated QC Samples
Soil			
SS-117-24	3/5/2018	24	TB-10
SS-118-24	3/5/2018	24	TB-10
SS-118-31	3/5/2018	31	TB-10
SS-115-24	3/6/2018	24	TB-10
SS-115-34	3/6/2018	34	TB-10/FD-12
SS-115-41	3/6/2018	41	TB-10
SS-111-25	3/6/2018	25	TB-10
SS-111-35	3/6/2018	35	TB-10
SS-111-45	3/6/2018	45	TB-10
SS-111-51	3/6/2018	51	TB-10
SS-108-27	3/7/2018	27	TB-11
SS-108-37	3/7/2018	37	TB-11
SS-108-47	3/7/2018	47	TB-11
SS-108-53	3/7/2018	53	TB-11
SS-107-28	3/7/2018	28	TB-11
SS-107-38	3/7/2018	38	TB-11
SS-107-48	3/7/2018	48	TB-11/FD-13
SS-106-29	3/8/2018	29	TB-11
SS-106-39	3/8/2018	39	TB-11
SS-106-49	3/8/2018	49	TB-11
SS-106-55	3/8/2018	55	TB-11
SS-109-25	3/8/2018	25	TB-12
SS-109-35	3/8/2018	35	TB-12
SS-109-45	3/8/2018	45	TB-12
SS-110-24	3/8/2018	24	TB-12
SS-110-34	3/8/2018	34	TB-12
SS-110-38	3/8/2018	38	TB-12
SS-112-23	3/9/2018	23	TB-12
SS-112-25	3/9/2018	25	TB-12
SS-113-23	3/9/2018	23	TB-13/FD-14
SS-113-26	3/9/2018	26	TB-13
SS-114-24	3/9/2018	24	TB-13
SS-114-34	3/9/2018	34	TB-13
SS-114-41	3/9/2018	41	TB-13/FD-15
SS-116-21	3/12/2018	21	TB-13
SS-119-28	3/12/2018	28	TB-13
SS-119-38	3/12/2018	38	TB-13
SS-119-48	3/12/2018	48	TB-13
SS-120-35	3/12/2018	35	TB-13

TABLE 1
ERH Baseline Sampling: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	Associated QC Samples
Groundwater			
MW-2	3/29/2018	23.3	TB-14
MW-3	4/2/2018	31.0	TB-15
MW-23	4/2/2018	32.2	TB-15
MW-23A	4/2/2018	47.5	TB-15
MW-24	4/2/2018	25.3	TB-15
MW-24A	4/2/2018	52.5	TB-15
MW-25	3/30/2018	32.6	TB-14
MW-25A	3/30/2018	47.1	TB-14
MW-26	3/29/2018	27.7	TB-14
MW-26A	3/29/2018	40.1	TB-14/FD-16
MW-27	3/29/2018	20.5	TB-14
MW-28	3/30/2018	28.0	TB-14
MW-28A	3/30/2018	42.9	TB-14
MW-29	3/29/2018	20.6	TB-14
MW-29A	3/30/2018	33.2	TB-14
MW-30	4/3/2018	23.1	TB-15/FD-17
MW-30A	4/3/2018	32.8	TB-15
MW-31	4/3/2018	30.4 - 35.2	TB-15
MW-31A	4/4/2018	51.7	TB-15
MW-32	4/4/2018	27.4 - 37.2	TB-15
LNAPL			
MW-12 (prod)	4/3/2018	20.4 - 25.5	FD-18
MW-14 (prod)	4/3/2018	17.0 - 17.8	

Notes:
1. bgs - below ground surface
2. TCE - trichloroethene, according to USEPA Method 8260

Prepared By: SEA 4/13/18
Checked By: GLH 5/21/18

TABLE 2
Baseline Soil Analytical Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	TCE Concentration
SS-117-24	3/5/2018	24	741,000
SS-118-24	3/5/2018	24	149,000
SS-118-31	3/5/2018	31	138,000
SS-115-24	3/6/2018	24	198,000
SS-115-34	3/6/2018	34	14,600
FD-12 (SS-115-34)	3/6/2018	34	8,170
SS-115-41	3/6/2018	41	727
SS-111-25	3/6/2018	25	38,200
SS-111-35	3/6/2018	35	4,320
SS-111-45	3/6/2018	45	8,830
SS-111-51	3/6/2018	51	2,440
SS-108-27	3/7/2018	27	190,000
SS-108-37	3/7/2018	37	132,000
SS-108-47	3/7/2018	47	4,450
SS-108-53	3/7/2018	53	2,460
SS-107-28	3/7/2018	28	68,600
SS-107-38	3/7/2018	38	2,060
SS-107-48	3/7/2018	48	5,750
FD-13 (SS-107-48)	3/7/2018	48	6,850
SS-106-29	3/8/2018	29	172,000
SS-106-39	3/8/2018	39	1,140
SS-106-49	3/8/2018	49	5,800
SS-106-55	3/8/2018	55	3,750
SS-109-25	3/8/2018	25	114,000
SS-109-35	3/8/2018	35	82,900
SS-109-45	3/8/2018	45	3,530
SS-110-24	3/8/2018	24	175
SS-110-34	3/8/2018	34	401
SS-110-38	3/8/2018	38	1,070
SS-112-23	3/9/2018	23	7.2
SS-112-25	3/9/2018	25	15.9
SS-113-23	3/9/2018	23	56,800
FD-14 (SS-113-23)	3/9/2018	23	103,000
SS-113-26	3/9/2018	26	2,660
SS-114-24	3/9/2018	24	32,300
SS-114-34	3/9/2018	34	21,700
SS-114-41	3/9/2018	41	833
FD-15 (SS-114-41)	3/9/2018	41	3,520

TABLE 2
Baseline Soil Analytical Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	TCE Concentration
SS-116-21	3/12/2018	21	1,610
SS-119-28	3/12/2018	28	4.5
SS-119-38	3/12/2018	38	27,600
SS-119-48	3/12/2018	48	2,480
SS-120-35	3/12/2018	35	7,850

Notes:
1. bgs - below ground surface
2. TCE - trichloroethene, according to USEPA Method 8260
3. Concentrations are in micrograms per kilogram (µg/kg)

Prepared By: SEA 4/13/18
Checked By: RMC 4/13/18

TABLE 3
Monitoring Well Construction Details
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Monitoring Well	Installation Date	Well Depth (bgs)	Screened Interval (bgs)	Ground Surface Elevation	Depth to Groundwater 3/28/18 (bgs)	Groundwater Elevation
MW-2	9/24/2008	28.3	18.3 - 28.0	2,416.5	13.85	2,402.7
MW-3	9/25/2008	36.1	26.1 - 35.8	2,417.2	19.71	2,397.5
MW-23	2/21/2018	34.9	29.8 - 34.6	2,417.3	21.99	2,395.3
MW-23A	2/21/2018	50.2	45.1 - 49.9	2,417.3	21.83	2,395.5
MW-24	2/22/2018	30.5	20.4 - 30.2	2,417.3	19.89	2,397.4
MW-24A	2/22/2018	55.2	50.1 - 54.9	2,417.3	20.03	2,397.3
MW-25	2/21/2018	35.3	30.2 - 35.0	2,417.3	18.20	2,399.1
MW-25A	2/21/2018	49.8	44.7 - 49.5	2,417.3	18.33	2,399.0
MW-26	2/26/2018	30.4	25.3 - 30.1	2,417.3	16.95	2,400.4
MW-26A	2/26/2018	42.8	37.7 - 42.5	2,417.3	17.44	2,399.9
MW-27	2/26/2018	25.7	15.6 - 25.4	2,417.3	15.03	2,402.3
MW-28	2/22/2018	30.7	25.6 - 30.4	2,417.3	17.42	2,399.9
MW-28A	2/22/2018	45.6	40.5 - 45.3	2,417.3	17.47	2,399.8
MW-29	2/20/2018	26.0	15.9 - 25.7	2,417.3	16.34	2,401.0
MW-29A	2/20/2018	35.9	30.8 - 35.6	2,417.3	16.36	2,400.9
MW-30	2/23/2018	25.8	20.7 - 25.5	2,417.3	17.68	2,399.6
MW-30A	2/23/2018	35.5	30.4 - 35.2	2,417.3	17.63	2,399.7
MW-31	3/22/2018	35.5	30.4 - 35.2	2,417.7	33.20	2,384.5
MW-31A	3/22/2018	54.4	49.3 - 54.1	2,417.7	24.98	2,392.7
MW-32	3/23/2018	37.5	27.4 - 37.2	2,426.5	27.43	2,399.1

Notes:
1. Depths are in feet relative to ground surface (bgs).
2. Elevations are approximate and in feet relative to mean sea level.

Prepared By: SEA 4/23/18
Checked By: GLH 4/23/18

TABLE 4
Baseline Groundwater Analytical Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	TCE Concentration
MW-2	3/29/2018	23.3	3,140
MW-3	4/2/2018	31.0	15,000
MW-23	4/2/2018	32.2	13,900
MW-23A	4/2/2018	47.5	21,700
MW-24	4/2/2018	25.3	8,130
MW-24A	4/2/2018	52.5	44,900
MW-25	3/30/2018	32.6	12,000
MW-25A	3/30/2018	47.1	24,900
MW-26	3/29/2018	27.7	28,800
MW-26A	3/29/2018	40.1	7,420
FD-16 (MW-26A)	3/29/2018	40.1	8,040
MW-27	3/29/2018	20.5	9,620
MW-28	3/30/2018	28.0	1,940
MW-28A	3/30/2018	42.9	51,300
MW-29	3/29/2018	20.6	1,950
MW-29A	3/30/2018	33.2	40,400
MW-30	4/3/2018	23.1	6,410
FD-17 (MW-30)	4/3/2018	23.1	6,390
MW-30A	4/3/2018	32.8	26,600
MW-31	4/3/2018	30.4 - 35.2	772
MW-31A	4/4/2018	51.7	8,690
MW-32	4/4/2018	27.4 - 37.2	2,590

Notes:
1. bgs - below ground surface
2. TCE - trichloroethene, according to USEPA Method 8260
3. Concentrations are in micrograms per liter (µg/L)

Prepared By: SEA 4/13/18
Checked By: RMC 4/13/18

TABLE 5
Baseline LNAPL Analytical Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample ID	Date	Sample Depth (feet bgs)	TCE Concentration
MW-12	4/3/2018	20.4 - 25.5	6,270
FD-18 (MW-12)	4/3/2018	20.4 - 25.5	5,650
MW-14	4/3/2018	17.0 - 17.8	10,200

Notes:
1. bgs - below ground surface
2. TCE - trichloroethene, according to USEPA Method 8260
3. Concentrations are in milligams per kilogram (mg/kg)

Prepared By: SEA 4/13/18
Checked By: RMC 4/13/18

FIGURES

SB-106
MW-23
MW-23A
SB-107
MW-12
MW-24
MW-24A
SB-108
MW-25
MW-25A
SB-109
MW-26
MW-26A
SB-111
SB-110
SB-114
MW-28
MW-28A
MW-27
MW-31
MW-31A
SB-119
SB-112
SB-113
MW-29
MW-29A
MW-3
SB-115
MW-14
SB-118
MW-32
SB-117
MW-30
MW-30A
MW-2
SB-116
SB-120

N

0 20 40 Feet

Legend

- New Monitoring Well
- Soil Boring
- Existing Monitoring Well
- ERH Treatment Area
- Fence
- Property Line

Note: New monitoring well and soil boring locations are approximate (i.e. not surveyed)

Prepared/Date: GLH 05/21/18
Checked/Date: SEA 05/21/18

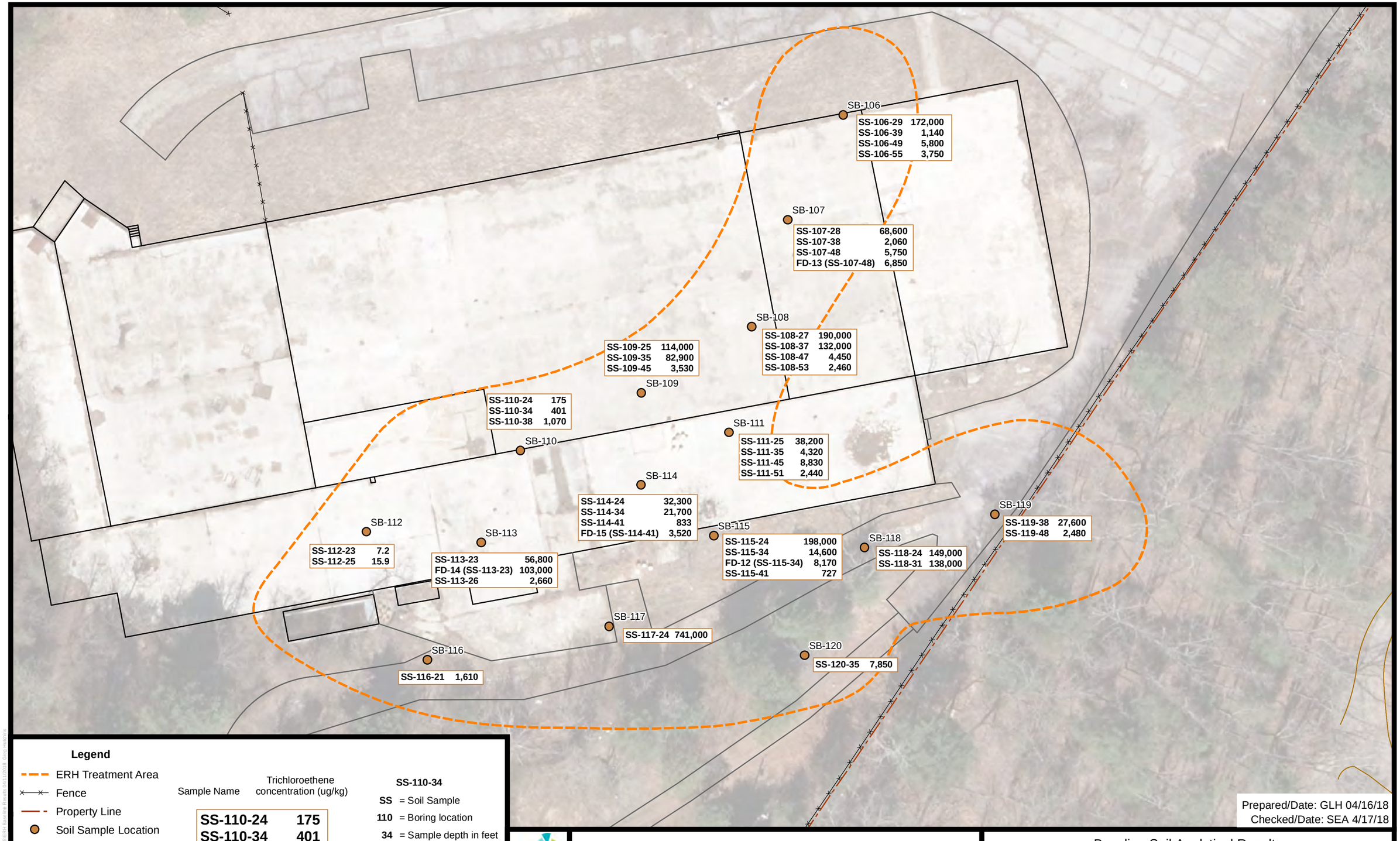
amec foster wheeler

CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

ERH Treatment Area and Sampling Locations

Project 6252162012

Figure 1



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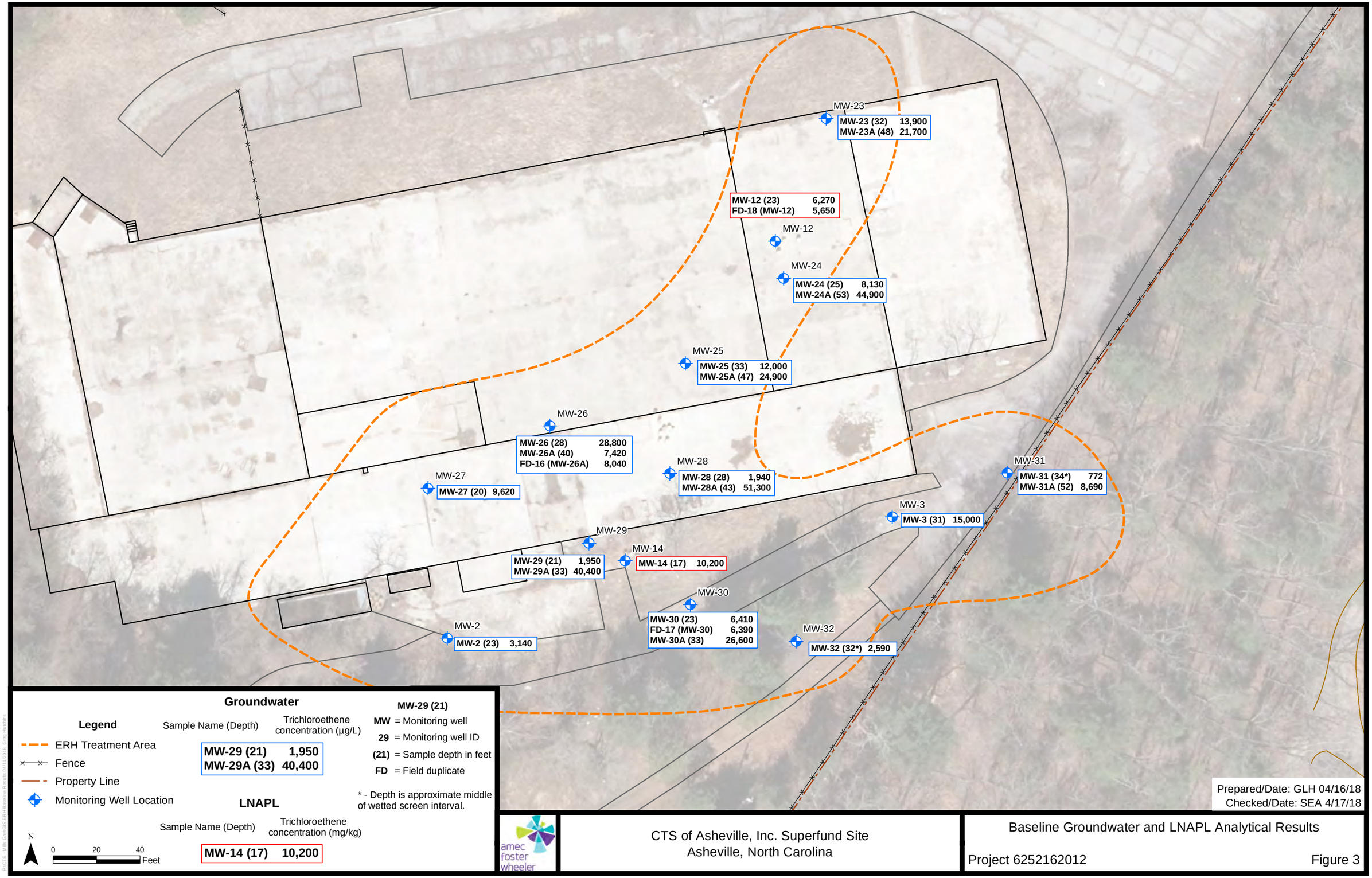
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

Baseline Soil Analytical Results

Project 6252162012

Figure 2

P:\CTS - Mills Gap\GIS\ERM Baseline Results 04\11\2018, Greg Webber



P:\CTS - Mills Gap\GIS\ERH Baseline Results 04\12\2018 Greg Huebner

CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

Baseline Groundwater and LNAPL Analytical Results

Project 6252162012

Figure 3

ATTACHMENT 1

SOIL BORING LOGS

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-106

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/8/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 90%	0.0		Red, sandy silt, moist, trace mica, trace organics (roots)
				0.0		Reddish brown to brown, silty fine to medium sand, slightly moist, some mica, massive appearance with dark mineral weathering
5				0.0		
			5-10 60%	0.0		
				0.1		
				0.3		
				0.2		
				0.2		
10				0.4		
			10-15 60%	0.1		
				0.2		
				0.5		Dark brown to grayish brown, micaceous, silty fine to medium sand, slightly moist, foliated
				0.4		
15				0.2		
			15-20 95%	0.5		
				0.9		
				1.0		
				1.8		
20				8.2		
			20-25 95%	38.6		
				180		
				426		
				148		Light brown, fine sand, moist, some silt and mica, massive with dark mineral weathering, zones with some foliation
25				229		
			25-30 90%	318		
				446		
				454		
				507		
30		SS-106-29		262		
			30-35 50%	115		
				31.3		
				35.5		
				51.5		
				23.0		Brown, micaceous, fine to medium sand, moist, little silt, massive appearance
35				53.8		
			35-40 86%	77.7		37.3 ft: 0.3-foot quartz-rich zone
				44.4		
				46.2		
				57.3		
40		SS-106-39		24.0		
			40-45 84%	20.9		
				30.1		
				38.1		
				108		45.0 ft: 0.2-foot quartz-rich zone
45				50.4		
			45-50 82%	32.8		47.0 ft: 0.4-foot quartz-rich zone
				24.4		
				36.9		48.8 ft: 0.1-foot quartz-rich zone
				64.7		
50		SS-106-49		45.6		
			50-55 84%	43.6		
				22.2		
				55.2		
55		SS-106-55				Boring terminated at 55 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-107

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/7/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
0			0-5 68%	2.0 1.0 3.8 4.1		Concrete Reddish brown to brown, silty, fine to medium sand, slightly moist, some mica, slight foliation to massive
5			5-10 76%	2.4 1.5 2.5		7.3 ft: 0.2-foot quartz seam
10			10-15 92%	4.2 5.6 5.0 10.4		Reddish brown to brown, micaceous to highly micaceous, silty, fine to medium sand, slightly moist, foliated, some coarse sand with massive zones at 16 to 17 feet and 18 to 19 feet
15			15-20 100%	15.0 21.0 67.6 37.5 142 196 213		
20			20-25 100%	139 565 747 523 496		Dark brown, micaceous, silty, fine to medium sand, moist to very moist, massive with some slight foliation
25			25-30 100%	947 280 310		
30		SS-107-28	30-35 86%	411 91.6 60.6 51.1 155 44.5		
35			35-40 64%	80.9 64.0		Orange to gray, fine sand, moist, trace mica, dark mineral seams, little/some silt, massive appearance (top of 35 to 40 foot run is wet/soupy)
40		SS-107-38	40-45 84%	57.0 85.2 190 48.3		
45			45-50 100%	117 79.3 56.6 45.9		
50		SS-107-48		55.5		Boring terminated at 50 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-108

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/7/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-3 100%	0.8		Concrete
				0.8		Light reddish brown to brown, micaceous, silty, fine to medium sand, slightly moist, some foliation
				1.1		
			3-8 80%	11.8		
5				10.6		
				6.7		
				5.1		
			8-13 80%	5.9		
				6.5		
10				6.0		
				8.5		
				18.7		
			13-18 100%	3.0		Dark brown, highly micaceous, silty sand, strong foliation
				75.6		
15				198		
				195		
				408		
			18-23 92%	655		
				552		
20				514		Orangish brown, silty, fine sand, massive with dark mineral weathering
				563		Dark brown, highly micaceous, silty sand, strong foliation
				510		
			23-28 70%	2274		Orangish brown to grayish brown, fine to medium sand, moist, little mica, some/little silt, trace coarse sand, massive appearance (wet at the top of the 23 to 28 foot run)
25				624		
				1021		
				647		
	X	SS-108-27		422		
			28-33 92%	1222		
				706		
30				476		
				592		31 ft: 0.1 foot quartz seam
				604		
			33-38 64%	1486		(very wet at the top of the 33 to 38 foot run)
				519		
35				448		
				516		
	X	SS-108-37		365		
				863		
			38-43 56%	44.7		
40				41.2		
				43.7		
				42.0		
			43-48 54%	238		
				72.6		
45				56.5		
				144		
	X	SS-108-47		31.7		
			48-53 100%	47.0		
				80.2		
50				112		
				1151		
	X	SS-108-53		68.5		
						Geoprobe refusal at 53 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-109

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/8/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5			Concrete
			74%	0.0		Brown to dark brown, micaceous, silty, fine sand, slightly moist, foliated
				0.0		
				0.0		
				0.0		
5				0.0		
			5-10	0.2		
			90%	1.0		
				1.0		
			80%	2.9		
10			10-15	3.0		11 ft: 0.1-foot quartz seam
			70%	6.4		Brown, silty, fine sand, moist, massive with dark mineral weathering
				9.0		11.5 ft: 0.1-foot quartz seam followed by 0.2-foot kaolin-rich layer
				12.8		
				42.9		Dark brown, micaceous, silty, fine sand, moist, foliated
15			15-20	156		
			80%	56.9		
				145		
				253		Dark orange to brown, fine sand, moist, some silt, some mica, massive with dark mineral weatering
				250		
20			20-25	551		Dark brown, highly micaceous, silty, fine sand, moist, foliated
			86%	330		
				470		
				412		
				383		
25		SS-109-25	25-30	437		Dark orange to brown, fine sand, moist, some silt, some mica, massive with dark mineral weathering
			86%	391		
				453		
				516		
				477		
30			30-35	433		Dark gray to dark brown, micaceous, silty, fine sand, moist, foilated
			90%	439		
				234		32.4 ft: 0.4-foot quartz seam (medium to gravel size)
				477		32.4 ft: 0.3-foot kaolin rich layer
				367		
35		SS-109-35	35-40	492		35 ft: 0.1-foot quartz seam
				348		
				287		
				218		38 ft: 0.3-foot quartz seam
				300		
40			40-45	87.2		
			100%	62.1		
				142		
				80.6		
		SS-109-45		57.3		Orangish brown, fine to medium sand, moist, little silt, little mica, massive with dark mineral weathering
45						Boring terminated at 45 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-110

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/8/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 60%	0.3		Concrete
				0.0		Possible fill, brown, silty, fine sand, fine organics (roots)
				0.0		
				1.3		Reddish brown to brown, silty, fine sand, slightly moist, zones of foliation
5			5-10 80%	1.4		
				0.2		
				0.6		
				0.7		
				0.9		
10			10-15 90%	1.0		Light brown, silty, fine sand, slightly moist, massive with dark mineral weathering
				0.5		
				1.2		
				2.4		Dark brown, micaceous, silty, fine sand, slightly moist, foliated
				1.7		
15			15-20 0%	0.9		Dark brown, micaceous, silty, fine sand, slightly moist, massive appearance
				1.4		
				1.5		
				0.4		
				2.0		
20			20-25 70%	1.5		
				3.0		
				1.6		
				2.8		Dark brown, micaceous, silty, fine sand, moist, massive with dark mineral weathering
		SS-110-24		3.1		
25			25-30 92%	13.2		Dark brown, highly micaceous, silty, fine sand, moist, foliated
				33.8		
				12.6		
				20.7		
				18.6		
30			30-35 100%	20.0		
				13.4		
				11.7		
				13.5		
		SS-110-34		17.2		
35			35-40 100%	19.4		
				8.0		
				27.5		
		SS-110-38		18.1		
				16.8		
40						Boring terminated at 40 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-111

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/6/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-3 83%	0.0 0.0		Concrete Light reddish brown to light brown, silty, fine sand, moist, some foliation
			3-8 90%	0.0 0.0		
5				0.0 0.0		Light yellowish brown, silty, fine sand, moist, trace dark mineral weathering
				0.0 0.0		
			8-13 96%	2.5 3.8		
10				5.6 8.8		
			13-18 98%	10.7 8.5		Light brown to light yellowish brown, silty, fine sand, moist to wet, some mica, trace dark mineral weathering 15 ft: 0.05-foot quartz seam
15				10.7 8.5		
				132 137		
			18-23 100%	160 179		Light brown to dark brown, micaceous, silty, fine sand, wet, trace foliation, trace dark mineral weathering
20				187 240		
			23-28 100%	247 403		
25		SS-111-25		419 91.8		
				321 409		
			28-33 100%	252 292		
30				303 219		
			33-38 96%	215 261		
35		SS-111-35		248 114		
				55.3 48.9		
			38-43 98%	52.9 84.3		
40				39.1 89.1		
			43-48 98%	241 415		
45		SS-111-45		746 348		Light yellowish brown, silty, fine sand, wet, some mica, trace dark mineral weathering
				165 175		
			48-51 89%	138 120		
50		SS-111-51		86.7		50.4 ft: 0.4-foot quartz rich zone Boring terminated at 51.5 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-112

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/9/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 80%	2.4		Concrete
				2.8		Orangish brown to brown, micaceous, silty, fine sand, slightly moist, some medium sand, mostly massive appearance with some slight foliation
				4.2		
				4.4		
5			5-10 78%	6.7		
				2.6		
				7.2		
				3.0		
				2.2		9 ft: 0.2-foot quartz seam
10			10-15 80%	8.2		
				6.1		
				5.4		
				1.3		Dark brown, micaceous to highly micaceous, silty, fine sand, moist, foliated
				2.9		
15			15-20 80%	10.1		
				4.3		
				9.3		
				3.7		
				1.8		
20			20-25	5.1		
				0.4		
				0.2		21.5 ft: 0.1-foot quartz and kaolin-rich layer
	X	SS-112-23		0.2		
				0.6		24 ft: 0.2-foot quartz and kaolin-rich layer, wet
25	X	SS-112-25	25-30	0.4		
						Geoprobe refusal at 25. feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-113

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: S. Avritt Checked By: R. Clark	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/9/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 94%	9.8		Concrete
				11.8		Brown, micaceous, silty, fine to medium sand, slightly moist, slight foliation, becoming strongly foliated at 5 feet
				24		
				22.8		
5			5-10 80%	37.3		
				11.4		
				7.3		
				6.4		
				14.7		
10			10-15 80%	7.2		
				18.8		
				56.2		
				48.6		
				129		13.5 ft: quartz seam (gravel size)
15			15-20 100%	221		14.5-15 ft: quartz layer (medium to gravel size)
				26.4		16-18 ft: quartz-rich zone (medium to gravel size)
				136		
				115		Dark brown, micaceous, silty, fine sand, moist, slightly foliated
				154		
20			20-25	297		
				29.1		21-21.5 ft: quartz zone (medium to gravel size, wet)
				158		
		SS-113-23		419		
				222		
25			25-30 100%	285		
		SS-113-26		385		
				110		27.2 ft: quartz seam
				76.6		28-30 ft: quartz-rich zone (medium to gravel size)
				14.5		
30						Geoprobe refusal at 30 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-114

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.3 ft.	Boring Date: 3/9/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5			Concrete
			86%	0.0		Reddish brown to brown, silty, fine sand, moist, some mica
				0.0		
				0.0		
				0.0		
5				0.0		
			5-10	0.5		
			64%	0.4		
				0.4		8 ft: 0.2-foot thick quartz seam
				0.3		
10				0.3		Brown to dark brown, micaceous, silty, fine sand, moist, mostly massive appearance
			10-15	7.4		
			80%	12.3		
				29.4		13 ft: 0.2-foot quartz seam
				107		
15				117		
			15-20	125		
			100%	187		
				233		
				207		
20				456		
			20-25	149		
			84%	252		
				277		
				500		
25	X	SS-114-24		278		
			25-30	423		
			84%	667		
				357		
				803		
30				559		
			30-35	289		Grayish brown to dark brown, fine to medium sand, moist, little/some silt, trace coarse sand, little mica, mostly massive appearance with dark mineral weathering
			96%	1064		
				1403		
				1848		
35	X	SS-114-34		1116		
			35-40	137		
			90%	187		
				132		
				791		38-39 ft: quartz and kaolin rich zone, saturated
40				750		
			40-45	118		
	X	SS-114-41	86%	43.6		40.8 ft: 0.1-foot quartz seam
				22.9		
				18.6		
45						Boring terminated at 45 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-115

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.0 ft.	Boring Date: 3/5/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-3 100%	0.0		Fill: Brown to light brown, silty, fine sand, moist, few roots, trace gravel
				0.0		Light reddish to yellowish brown, silty, fine sand, moist, mostly massive appearance with foliation, dark mineral weathering
			3-8 96%	0.0		
				0.0		
5				0.0		
				0.5		
				3.5		
			8-13 0%	1.2		
10						
			13-18 100%	0.0		Orangish brown, silty, fine sand, moist, some foliation
				0.0		
15				3.1		
				21.6		
			18-23 96%	81.0		
				139.5		
20				692.7		
				231.9		
				245.7		Light brown to light grayish brown, silty, fine to medium sand, gravel sized partially weathered rock fragments, massive apperance
			23-28 98%	567.5		
		SS-115-24		905.6		
25				282.4		
				321.0		25.3 ft: 0.2-foot quartz seam
				199.8		26.7 ft: 0.3-foot quartz seam
			28-33 74%	86.5		28.3 ft: 0.2-foot quartz seam
				209.3		
30				302.4		
				289.6		31 ft: some gravel sized rock fragments at approximately 31-31.5 and 32.5-33 feet
				858.4		
			33-38 80%	408.8		Light grayish brown to light brown, silty, fine to medium sand, trace rock fragments at 33.5 ft, massive apperance
		SS-115-34		360.9		
35				305.9		
				289.6		
				356.5		
			38-42 86%			
				329.5		
40				22.6		
		SS-115-41		42.4		
						Geoprobe refusal at 42 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-116

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2418.0 ft.	Boring Date: 3/12/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 80%	0.0		Asphalt
				0.0		Dark gray to reddish brown, sandy, silt,some gravel, moist
				0.4		Light brown, silty, fine sand, moist, massive appearance with some dark mineral weathering
				0.5		
5			5-10 90%	1.2		
				0.4		
				1.3		
				2.0		
				3.2		Brown to dark brown, micaceous, silty, fine sand, moist
10			10-15 94%	3.7		
				6.0		
				4.0		
				6.4		
				18.2		
15			15-20 96%	26.3		
				21.5		
				47.5		
				45.0		
				39.2		Brown to dark brown, fine to medium sand, some silt, some mica, moist, massive appearance
20			20-25 76%	82.8		
	X	SS-116-21		3.8		
				13.2		Brown to dark brown, micaceous, silty, fine sand, moist, some foliation
				18.7		
				22.3		
25						Boring terminated at 25 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-117

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.0 ft.	Boring Date: 3/5/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-3 87%	0.0		Concrete
				0.1		Brown, silty, fine sand, moist, trace mica, massive appearance with dark mineral weathering
			3-8 92%	0.0		
				0.0		
5				0.0		
				0.0		
				0.0		
			8-13 92%	0.0		Brownish gray, fine to medium sand, moist, little silt, massive
				2.5		8.5 ft: 0.1-foot thick quartz seam
10				6.6		
				333.3		
				414.1		
			13-18 86%	371.9		
				255.9		
15				398.4		
				1159		
				1942		17 ft: 0.1-foot quartz seam
			18-23 92%	1613		Light brown to grayish brown, fine to medium sand
				1033		
20				4134		
				1333		
				3717		22 ft: 0.1-foot quartz seam
			23-28 96%	3967		
				659.4		
25		SS-117-24		411.3		
				683.4		
				510.7		

Boring terminated at 28 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

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Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-118

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2417.5 ft.	Boring Date: 3/5/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-3 100%	0.0		Asphalt withaggregate base
				0.0		Fill: reddish to yellowish brown, silty, fine sand, slightly moist, some gravel
			3-8 98%	0.0		Light reddish brown, silty, fine sand, slightly moist, some mica, some foliation
5				0.3		
				0.5		
				0.8		
				1.0		
			8-13 96%	1.1		Reddish brown to yellowish brown, micaceous, silty, fine sand, trace dark mineral weathering
10				0.4		
				0.5		
				0.5		
				0.5		
			13-18 92%	0.4		Brown, trace dark mineral weathering, micaceous, light brown, little mica
				0.5		14.5 ft: 0.1-foot quartz seam
15				2.7		Light yellowish brown, silty, fine sand, moist
				6.3		
				60.2		
			18-23 92%	232.8		
				422.0		
20				290.4		
				600.2		Light yellowish brown, silty, fine sand, some medium sand, moist to wet
				356.7		
			23-28 100%	209.8		Light yellowish brown to dark brown, micaceous, silty, fine sand, wet
		SS-118-24		535.4		
25				692.7		
				767.4		
				515.0		
			28-33 100%	364.5		Dark brown to brown, micaceous, silty, fine sand, wet
				126.2		
30				379.3		
		SS-118-31		506.2		
				445.3		

Boring terminated at 33 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

amec foster wheeler

Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-119

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2418.0 ft.	Boring Date: 3/12/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
0			0-5 84%	0.0		Asphalt
				0.0		Fill, olive brown, fine sandy silt, some gravel
				0.0		Orangish brown, silty, fine sand, moist, mostly massive with dark mineral weathering
				0.0		
5			5-10 86%	0.0		
				0.0		
				0.0		
				0.0		
				0.0		
10			10-15 70%	0.0		
				0.0		
				0.0		
15			15-20 76%	0.0		
20			20-25 94%			
				0.0		
				0.0		
				0.0		
25			25-30 78%	0.0		
				0.0		
				0.0		
	X	SS-119-28		0.0		Yellowish brown, silty, fine sand, some mica, some foliation
				0.0		
30			30-35 90%	0.0		
				139		
				194		Dark yellowish brown, micaceous, silty, fine to medium sand, slightly wet, foliation
				97.5		
				205		
35			35-40 92%	199		
				368		
				393		37.5 ft: 0.2-foot zone of kaolin
	X	SS-119-38		414		
				234		
40			40-45 92%	216		Dark yellowish brown, micaceous, silty, fine sand, wet
				355		
				327		
				291		
				266		
45			45-50 90%	491		
				71.5		
				46.3		
	X	SS-119-48		26.8		
				24.6		
50						Geoprobe refusal at 50 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

amec foster wheeler

Amec Foster Wheeler Environment & Infrastructure, Inc.
1308 Patton Avenue
Asheville, North Carolina 28806

Boring ID: SB-120

Project: CTS of Asheville, Inc. Superfund Site	Drilling Company: Geologic Exploration
Location: Asheville, North Carolina	Driller: Johnny Burr
Project Number: 6252162012	Boring Method: Direct-Push Technology
Logged By: R. Clark Checked By: S. Avritt	Equipment: Geoprobe 8040
Approximate Ground Surface Elevation (feet): 2427.0 ft.	Boring Date: 3/12/2018

Depth (feet)	Sample	Sample Name	Recovery (%)	PID (ppm)	Lithology	Lithologic Description
			0-5 76%	0.0		Light orange, fine sandy silt, moist, trace roots
				0.0		Yellowish brown, micaceous, silty, fine sand, moist, slightly foliated to layered
				0.0		
				0.0		
5				0.0		
			5-10 96%	0.0		
				0.0		
				0.0		
				0.0		
				0.0		
10				0.2		Yellowish brown, micaceous, silty, fine sand, moist, trace foliation, trace dark mineral weathering
			10-15 96%	0.0		
				0.0		
				0.2		
				0.4		
15				0.2		
			15-20 96%	0.3		
				0.4		
				0.8		17.5 ft: trace rock fragments
				2.6		
20				4.3		Reddish to yellowish brown, silty, fine sand, moist, some mica, trace foliation
			20-25 98%	0.7		
				1.4		
				0.9		
				3.1		
25				3.0		Brown to dark brown to grayish brown, micaceous, fine to medium sand, wet, little to some silt, slight layering
			25-30 96%	259		
				219		
				238		
				181		
30				174		
			30-35 96%	208		
				86.2		
				233		
				426		
35	⊠	SS-120-35				Geoprobe refusal at 35 feet.

REMARKS:
PID (ppm) = Photoionization Detector (parts per million)

ATTACHMENT 2

SOIL ANALYTICAL DATA

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 14, 2018

Susan Avritt
Amec Foster Wheeler
1308 Patton Avenue
Asheville, NC 28806

RE: Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Dear Susan Avritt:
Enclosed are the analytical results for sample(s) received by the laboratory on March 07, 2018. 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.

Client Sample IDs changed from SB- to SS- at client request via e-mail from Susan Avritt, 3/12/18.

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

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92375814001	**SS-117-24**	Solid	03/05/18 12:20	03/07/18 08:51
92375814002	**SS-118-24**	Solid	03/05/18 15:20	03/07/18 08:51
92375814003	**SS-118-31**	Solid	03/05/18 16:02	03/07/18 08:51
92375814004	**SS-115-24**	Solid	03/06/18 08:45	03/07/18 08:51
92375814005	**SS-115-34**	Solid	03/06/18 09:40	03/07/18 08:51
92375814006	**SS-115-41**	Solid	03/06/18 11:15	03/07/18 08:51
92375814007	**SS-111-25**	Solid	03/06/18 15:30	03/07/18 08:51
92375814008	**SS-111-35**	Solid	03/06/18 16:00	03/07/18 08:51
92375814009	**SS-111-45**	Solid	03/06/18 16:30	03/07/18 08:51
92375814010	**SS-111-51**	Solid	03/06/18 17:30	03/07/18 08:51
92375814011	**FD-12**	Solid	03/06/18 00:00	03/07/18 08:51
92375814012	**TB-10**	Water	03/06/18 00:00	03/07/18 08:51

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SAMPLE ANALYTE COUNT

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92375814001	**SS-117-24**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814002	**SS-118-24**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814003	**SS-118-31**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814004	**SS-115-24**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814005	**SS-115-34**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814006	**SS-115-41**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814007	**SS-111-25**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814008	**SS-111-35**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814009	**SS-111-45**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814010	**SS-111-51**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814011	**FD-12**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92375814012	**TB-10**	EPA 8260	GAW	11	PASI-C

Pace Analytical Services, LLC
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SUMMARY OF DETECTION

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92375814001	**SS-117-24**					
EPA 8260	Trichloroethene	741000	ug/kg	27600	03/09/18 14:13	
ASTM D2974-87	Percent Moisture	18.0	%	0.10	03/09/18 13:03	
92375814002	**SS-118-24**					
EPA 8260	Trichloroethene	149000	ug/kg	10100	03/09/18 14:33	
ASTM D2974-87	Percent Moisture	18.8	%	0.10	03/09/18 13:03	
92375814003	**SS-118-31**					
EPA 8260	Trichloroethene	138000	ug/kg	8190	03/09/18 17:31	
ASTM D2974-87	Percent Moisture	16.2	%	0.10	03/09/18 13:03	
92375814004	**SS-115-24**					
EPA 8260	Trichloroethene	198000	ug/kg	8460	03/09/18 17:50	
ASTM D2974-87	Percent Moisture	20.2	%	0.10	03/09/18 13:03	
92375814005	**SS-115-34**					
EPA 8260	Trichloroethene	14600	ug/kg	1160	03/09/18 14:53	
ASTM D2974-87	Percent Moisture	17.9	%	0.10	03/09/18 13:03	
92375814006	**SS-115-41**					
EPA 8260	Trichloroethene	727	ug/kg	119	03/09/18 15:13	
ASTM D2974-87	Percent Moisture	15.8	%	0.10	03/09/18 13:04	
92375814007	**SS-111-25**					
EPA 8260	Trichloroethene	38200	ug/kg	2650	03/09/18 15:32	
ASTM D2974-87	Percent Moisture	23.1	%	0.10	03/09/18 13:04	
92375814008	**SS-111-35**					
EPA 8260	Trichloroethene	4320	ug/kg	133	03/08/18 20:17	
ASTM D2974-87	Percent Moisture	27.3	%	0.10	03/09/18 13:04	
92375814009	**SS-111-45**					
EPA 8260	Trichloroethene	8830	ug/kg	5.3	03/08/18 20:36	E
ASTM D2974-87	Percent Moisture	25.8	%	0.10	03/09/18 13:04	
92375814010	**SS-111-51**					
EPA 8260	Trichloroethene	2440	ug/kg	466	03/09/18 15:52	
ASTM D2974-87	Percent Moisture	17.4	%	0.10	03/09/18 13:04	
92375814011	**FD-12**					
EPA 8260	Trichloroethene	8170	ug/kg	516	03/09/18 16:12	
ASTM D2974-87	Percent Moisture	17.2	%	0.10	03/09/18 13:04	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Method: **EPA 8260**
Description: 8260 MSV Low Level
Client: Amec Foster Wheeler, Asheville
Date: March 14, 2018

General Information:
1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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PROJECT NARRATIVE

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 14, 2018

General Information:
11 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: 401196

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

- SS-111-25 (Lab ID: 92375814007)
  - 4-Bromofluorobenzene (S)
- SS-117-24 (Lab ID: 92375814001)
  - 4-Bromofluorobenzene (S)
- SS-118-24 (Lab ID: 92375814002)
  - 4-Bromofluorobenzene (S)

QC Batch: 401362

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

- DUP (Lab ID: 2227121)
  - 1,2-Dichloroethane-d4 (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 14, 2018

Additional Comments:

Analyte Comments:

QC Batch: 401196

1g: The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.

- DUP (Lab ID: 2225889)
  - Toluene-d8 (S)

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- SS-111-45 (Lab ID: 92375814009)
  - Trichloroethene

T3: Insufficient sample received from client to perform the analysis per EPA method requirements.

- SS-111-45 (Lab ID: 92375814009)
  - Toluene-d8 (S)

QC Batch: 401362

1g: The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.

- DUP (Lab ID: 2227121)
  - Toluene-d8 (S)

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-117-24 **Lab ID: 92375814001** Collected: 03/05/18 12:20 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**741000**	ug/kg	27600	11600	5000		03/09/18 14:13	79-01-6	
Surrogates									
Toluene-d8 (S)	118	%	70-130		25		03/08/18 17:59	2037-26-5	
4-Bromofluorobenzene (S)	213	%	70-130		25		03/08/18 17:59	460-00-4	S1
1,2-Dichloroethane-d4 (S)	93	%	70-132		25		03/08/18 17:59	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.0**	%	0.10	0.10	1		03/09/18 13:03		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-118-24 **Lab ID: 92375814002** Collected: 03/05/18 15:20 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**149000**	ug/kg	10100	4230	2000		03/09/18 14:33	79-01-6	
Surrogates									
Toluene-d8 (S)	103	%	70-130		25		03/08/18 18:18	2037-26-5	
4-Bromofluorobenzene (S)	197	%	70-130		25		03/08/18 18:18	460-00-4	S1
1,2-Dichloroethane-d4 (S)	97	%	70-132		25		03/08/18 18:18	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.8**	%	0.10	0.10	1		03/09/18 13:03		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-118-31 **Lab ID: 92375814003** Collected: 03/05/18 16:02 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**138000**	ug/kg	8190	3440	2000		03/09/18 17:31	79-01-6	
Surrogates									
Toluene-d8 (S)	97	%	70-130		2000		03/09/18 17:31	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		2000		03/09/18 17:31	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-132		2000		03/09/18 17:31	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.2**	%	0.10	0.10	1		03/09/18 13:03		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-115-24 **Lab ID: 92375814004** Collected: 03/06/18 08:45 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**198000**	ug/kg	8460	3550	2000		03/09/18 17:50	79-01-6	
Surrogates									
Toluene-d8 (S)	96	%	70-130		2000		03/09/18 17:50	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		2000		03/09/18 17:50	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-132		2000		03/09/18 17:50	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.2**	%	0.10	0.10	1		03/09/18 13:03		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-115-34 **Lab ID: 92375814005** Collected: 03/06/18 09:40 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**14600**	ug/kg	1160	489	250		03/09/18 14:53	79-01-6	
Surrogates									
Toluene-d8 (S)	96	%	70-130		25		03/08/18 19:18	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		25		03/08/18 19:18	460-00-4	
1,2-Dichloroethane-d4 (S)	78	%	70-132		25		03/08/18 19:18	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.9**	%	0.10	0.10	1		03/09/18 13:03		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-115-41 **Lab ID: 92375814006** Collected: 03/06/18 11:15 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**727**	ug/kg	119	50.0	25		03/09/18 15:13	79-01-6	
Surrogates									
Toluene-d8 (S)	93	%	70-130		1		03/08/18 19:37	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		03/08/18 19:37	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-132		1		03/08/18 19:37	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.8**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-111-25 **Lab ID: 92375814007** Collected: 03/06/18 15:30 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**38200**	ug/kg	2650	1110	500		03/09/18 15:32	79-01-6	
Surrogates									
Toluene-d8 (S)	116	%	70-130		25		03/08/18 19:57	2037-26-5	
4-Bromofluorobenzene (S)	283	%	70-130		25		03/08/18 19:57	460-00-4	S1
1,2-Dichloroethane-d4 (S)	91	%	70-132		25		03/08/18 19:57	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.1**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-111-35 **Lab ID: 92375814008** Collected: 03/06/18 16:00 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**4320**	ug/kg	133	55.8	25		03/08/18 20:17	79-01-6	
Surrogates									
Toluene-d8 (S)	100	%	70-130		25		03/08/18 20:17	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		25		03/08/18 20:17	460-00-4	
1,2-Dichloroethane-d4 (S)	81	%	70-132		25		03/08/18 20:17	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**27.3**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-111-45 **Lab ID: 92375814009** Collected: 03/06/18 16:30 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**8830**	ug/kg	5.3	2.2	1		03/08/18 20:36	79-01-6	E
Surrogates									
Toluene-d8 (S)	95	%	70-130		1		03/08/18 20:36	2037-26-5	T3
4-Bromofluorobenzene (S)	105	%	70-130		1		03/08/18 20:36	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%	70-132		1		03/08/18 20:36	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.8**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: SS-111-51 **Lab ID: 92375814010** Collected: 03/06/18 17:30 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**2440**	ug/kg	466	196	100		03/09/18 15:52	79-01-6	
Surrogates									
Toluene-d8 (S)	97	%	70-130		1		03/08/18 20:56	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130		1		03/08/18 20:56	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-132		1		03/08/18 20:56	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.4**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: FD-12 **Lab ID: 92375814011** Collected: 03/06/18 00:00 Received: 03/07/18 08:51 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**8170**	ug/kg	516	217	100		03/09/18 16:12	79-01-6	
Surrogates									
Toluene-d8 (S)	103	%	70-130		25		03/08/18 21:16	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		25		03/08/18 21:16	460-00-4	
1,2-Dichloroethane-d4 (S)	79	%	70-132		25		03/08/18 21:16	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.2**	%	0.10	0.10	1		03/09/18 13:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Sample: TB-10 **Lab ID: 92375814012** Collected: 03/06/18 00:00 Received: 03/07/18 08:51 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		03/09/18 11:12	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		03/09/18 11:12	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		03/09/18 11:12	156-60-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		03/09/18 11:12	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		03/09/18 11:12	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		03/09/18 11:12	71-55-6	
Trichloroethene	ND	ug/L	1.0	0.47	1		03/09/18 11:12	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		03/09/18 11:12	75-01-4	
Surrogates									
4-Bromofluorobenzene (S)	110	%	70-130		1		03/09/18 11:12	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-130		1		03/09/18 11:12	17060-07-0	
Toluene-d8 (S)	108	%	70-130		1		03/09/18 11:12	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

QC Batch: 401344 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92375814012

METHOD BLANK: 2226004 Matrix: Water
Associated Lab Samples: 92375814012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	1.0	0.48	03/09/18 10:38	
1,1-Dichloroethene	ug/L	ND	1.0	0.56	03/09/18 10:38	
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	03/09/18 10:38	
Tetrachloroethene	ug/L	ND	1.0	0.46	03/09/18 10:38	
Toluene	ug/L	ND	1.0	0.26	03/09/18 10:38	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	03/09/18 10:38	
Trichloroethene	ug/L	ND	1.0	0.47	03/09/18 10:38	
Vinyl chloride	ug/L	ND	1.0	0.62	03/09/18 10:38	
1,2-Dichloroethane-d4 (S)	%	106	70-130		03/09/18 10:38	
4-Bromofluorobenzene (S)	%	107	70-130		03/09/18 10:38	
Toluene-d8 (S)	%	106	70-130		03/09/18 10:38	

LABORATORY CONTROL SAMPLE: 2226005

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	59.0	118	71-129	
1,1-Dichloroethene	ug/L	50	55.8	112	66-135	
cis-1,2-Dichloroethene	ug/L	50	56.3	113	74-124	
Tetrachloroethene	ug/L	50	48.6	97	78-122	
Toluene	ug/L	50	53.7	107	80-121	
trans-1,2-Dichloroethene	ug/L	50	55.6	111	71-127	
Trichloroethene	ug/L	50	56.6	113	78-122	
Vinyl chloride	ug/L	50	55.7	111	50-150	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 2227686

Parameter	Units	92375966002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	20	21.3	106	70-130	
1,1-Dichloroethene	ug/L	ND	20	23.0	115	70-166	
cis-1,2-Dichloroethene	ug/L	ND	20	21.5	108	70-130	
Tetrachloroethene	ug/L	ND	20	18.4	92	70-130	
Toluene	ug/L	ND	20	19.8	99	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	21.0	105	70-130	
Trichloroethene	ug/L	ND	20	21.9	110	69-151	
Vinyl chloride	ug/L	ND	20	23.3	116	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

MATRIX SPIKE SAMPLE: 2227686

Parameter	Units	92375966002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%				106	70-130	
4-Bromofluorobenzene (S)	%				102	70-130	
Toluene-d8 (S)	%				90	70-130	

SAMPLE DUPLICATE: 2227685

Parameter	Units	92375966001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	109	97	12		
4-Bromofluorobenzene (S)	%	109	94	15		
Toluene-d8 (S)	%	108	101	7		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

QC Batch: 401196 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92375814001, 92375814002, 92375814005, 92375814006, 92375814007, 92375814008, 92375814009, 92375814010, 92375814011

METHOD BLANK: 2225289 Matrix: Solid
Associated Lab Samples: 92375814001, 92375814002, 92375814005, 92375814006, 92375814007, 92375814008, 92375814009, 92375814010, 92375814011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	5.8	2.4	03/08/18 13:24	
1,2-Dichloroethane-d4 (S)	%	99	70-132		03/08/18 13:24	
4-Bromofluorobenzene (S)	%	96	70-130		03/08/18 13:24	
Toluene-d8 (S)	%	96	70-130		03/08/18 13:24	

LABORATORY CONTROL SAMPLE: 2225290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	57.9	62.2	107	67-135	
1,2-Dichloroethane-d4 (S)	%			93	70-132	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			96	70-130	

MATRIX SPIKE SAMPLE: 2225890

Parameter	Units	92375960001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	2.3J	20.8	21.5	92	49-167	
1,2-Dichloroethane-d4 (S)	%				86	70-132	
4-Bromofluorobenzene (S)	%				95	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 2225889

Parameter	Units	92375942001 Result	Dup Result	RPD	Max RPD	Qualifiers
Trichloroethene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	124	123	7		
4-Bromofluorobenzene (S)	%	86	79	0		
Toluene-d8 (S)	%	82	81	7		1g

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

QC Batch: 401362 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92375814003, 92375814004

METHOD BLANK: 2226186 Matrix: Solid
Associated Lab Samples: 92375814003, 92375814004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	5.2	2.2	03/09/18 11:36	
1,2-Dichloroethane-d4 (S)	%	91	70-132		03/09/18 11:36	
4-Bromofluorobenzene (S)	%	97	70-130		03/09/18 11:36	
Toluene-d8 (S)	%	96	70-130		03/09/18 11:36	

LABORATORY CONTROL SAMPLE: 2226187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	46.6	47.3	101	67-135	
1,2-Dichloroethane-d4 (S)	%			86	70-132	
4-Bromofluorobenzene (S)	%			95	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE SAMPLE: 2227120

Parameter	Units	92375962001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	ND	16.7	12.7	77	49-167	
1,2-Dichloroethane-d4 (S)	%				98	70-132	
4-Bromofluorobenzene (S)	%				104	70-130	
Toluene-d8 (S)	%				101	70-130	

SAMPLE DUPLICATE: 2227121

Parameter	Units	92375986002 Result	Dup Result	RPD	Max RPD	Qualifiers
Trichloroethene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	183	158	14		S1
4-Bromofluorobenzene (S)	%	72	79	11		
Toluene-d8 (S)	%	90	101	12		1g

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

QC Batch: 401177 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92375814001, 92375814002, 92375814003, 92375814004, 92375814005, 92375814006, 92375814007, 92375814008, 92375814009, 92375814010, 92375814011

SAMPLE DUPLICATE: 2225096

Parameter	Units	92374688001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.7	12.8	9	25	

SAMPLE DUPLICATE: 2225097

Parameter	Units	92375819001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.7	5.6	2	25	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

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 adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g	The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
S1	Surrogate recovery outside laboratory control limits (confirmed by re-analysis).
T3	Insufficient sample received from client to perform the analysis per EPA method requirements.

Pace Analytical Services, LLC
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CTS OF ASHEVILLE
Pace Project No.: 92375814

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92375814012	**TB-10**	EPA 8260	401344		
92375814001	**SS-117-24**	EPA 8260	401196		
92375814002	**SS-118-24**	EPA 8260	401196		
92375814003	**SS-118-31**	EPA 8260	401362		
92375814004	**SS-115-24**	EPA 8260	401362		
92375814005	**SS-115-34**	EPA 8260	401196		
92375814006	**SS-115-41**	EPA 8260	401196		
92375814007	**SS-111-25**	EPA 8260	401196		
92375814008	**SS-111-35**	EPA 8260	401196		
92375814009	**SS-111-45**	EPA 8260	401196		
92375814010	**SS-111-51**	EPA 8260	401196		
92375814011	**FD-12**	EPA 8260	401196		
92375814001	**SS-117-24**	ASTM D2974-87	401177		
92375814002	**SS-118-24**	ASTM D2974-87	401177		
92375814003	**SS-118-31**	ASTM D2974-87	401177		
92375814004	**SS-115-24**	ASTM D2974-87	401177		
92375814005	**SS-115-34**	ASTM D2974-87	401177		
92375814006	**SS-115-41**	ASTM D2974-87	401177		
92375814007	**SS-111-25**	ASTM D2974-87	401177		
92375814008	**SS-111-35**	ASTM D2974-87	401177		
92375814009	**SS-111-45**	ASTM D2974-87	401177		
92375814010	**SS-111-51**	ASTM D2974-87	401177		
92375814011	**FD-12**	ASTM D2974-87	401177		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Amec Foster

Project #: WO# : 92375814

92375814

Courier: ☐ Commercial ☐ Fed Ex ☐ Pace ☐ UPS ☐ USPS ☐ Other:____ ☑ Client

Custody Seal Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Date/Initials Person Examining Contents: 3/7/17 A

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: T027 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 2.9 **Correction Factor:** Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 2.9

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: SL / WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: (TC) **Date:** 3/8

Project Manager SRF Review: (TC) **Date:** 3/8

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # WO#: 92375814

PM: PTE Due Date: 03/14/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																					3							
2																					1							
3																					1							
4																					1							
5																					1							
6																					1							
7																					1							
8																					1							
9																					1							
10																					1							
11																					1							
12																2												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Pace Analytical™
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of

Section A Required Client Information:

Company:	Amec Foster Wheeler
Address:	1308 Patton Avenue
	Asheville, NC 28806
Email To:	susan.avritt@amecfw.com
Phone: 828-252-8130	Fax
Requested Due Date/TAT:	standard

Section B Required Project Information:

Report To:	Susan Avritt
Copy To:	
Purchase Order No.:	not required
Project Name:	CTS of Asheville
Project Number:	6252162012

Section C Invoice Information:

Attention:	Susan Avritt
Company Name:	Amec Foster Wheeler
Address:	susan.avritt@amecfw.com
Pace Quote Reference:	
Pace Project Manager:	Taylor Ezell
Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER

Site Location STATE: NC

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCE by EPA 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-117-24	SL	G			3/5/18	1220		18						✓	✓	✓	✓	✓	NA	92375814 001
2	SB-118-24	SL	G			3/5/18	1520		6						✓	✓	✓	✓	✓	NA	002
3	SB-118-31	SL	G			3/5/18	1605		6						✓	✓	✓	✓	✓	NA	003
4	SB-115-24	SL	G			3/6/18	0845		6						✓	✓	✓	✓	✓	NA	004
5	SB-115-34	SL	G			3/6/18	0940		6						✓	✓	✓	✓	✓	NA	005
6	SB-115-41	SL	G			3/6/18	1115		6						✓	✓	✓	✓	✓	NA	006
7	SB-111-25	SL	G			3/6/18	1530		6						✓	✓	✓	✓	✓	NA	007
8	SB-111-35	SL	G			3/6/18	1600		6						✓	✓	✓	✓	✓	NA	008
9	SB-111-45	SL	G			3/6/18	1630		6						✓	✓	✓	✓	✓	NA	009
10	SB-111-51	SL	G			3/6/18	1730		6						✓	✓	✓	✓	✓	NA	010
11	FD-12	SL	G			[illegible]			6						✓	✓	✓	✓	✓	NA	011
12	TB-10	WT	G			[illegible]			2				✓						✓	NA	012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Level IV data package		3/6/18	1845		3/7/18	8:15				
		3/7/18	8:51		3/7/18	8151	2.9	4	4	4

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Rodney M. Clark

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 3/6/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 20, 2018

Susan Avritt
Amec Foster Wheeler
1308 Patton Avenue
Asheville, NC 28806

RE: Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Dear Susan Avritt:
Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2018. 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.

Report revised 3/20/18 to change sample ID at client request.

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

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376321001	**FD-13**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321002	**SS-108-27**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321003	**SS-108-37**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321004	**SS-108-47**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321005	**SS-108-53**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321006	**SS-107-28**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321007	**SS-107-38**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321008	**SS-107-48**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321009	**SS-106-29**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321010	**SS-106-39**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321011	**SS-106-49**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321012	**SS-106-55**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321013	**SS-109-25**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321014	**SS-109-35**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321015	**SS-109-45**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321016	**SS-110-24**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321017	**SS-110-34**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321018	**SS-110-38**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321019	**SS-112-23**	EPA 8260	DLK	4	PASI-C

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SAMPLE ANALYTE COUNT

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	KDF	1	PASI-C
92376321020	**SS-112-25**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376321021	**TB-11**	EPA 8260	GAW	11	PASI-C
92376321022	**TB-12**	EPA 8260	GAW	11	PASI-C

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SUMMARY OF DETECTION

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92376321001	**FD-13**					
EPA 8260	Trichloroethene	6850	ug/kg	1260	03/13/18 16:57	
ASTM D2974-87	Percent Moisture	23.8	%	0.10	03/13/18 10:46	
92376321002	**SS-108-27**					
EPA 8260	Trichloroethene	190000	ug/kg	6180	03/13/18 17:17	
ASTM D2974-87	Percent Moisture	16.1	%	0.10	03/13/18 10:48	
92376321003	**SS-108-37**					
EPA 8260	Trichloroethene	132000	ug/kg	11300	03/13/18 17:38	
ASTM D2974-87	Percent Moisture	15.3	%	0.10	03/13/18 10:48	
92376321004	**SS-108-47**					
EPA 8260	Trichloroethene	4450	ug/kg	1380	03/13/18 17:58	
ASTM D2974-87	Percent Moisture	13.4	%	0.10	03/13/18 10:48	
92376321005	**SS-108-53**					
EPA 8260	Trichloroethene	2460	ug/kg	1700	03/13/18 18:19	
ASTM D2974-87	Percent Moisture	13.1	%	0.10	03/13/18 10:48	
92376321006	**SS-107-28**					
EPA 8260	Trichloroethene	68600	ug/kg	5080	03/13/18 18:39	
ASTM D2974-87	Percent Moisture	21.6	%	0.10	03/13/18 10:48	
92376321007	**SS-107-38**					
EPA 8260	Trichloroethene	2060	ug/kg	1070	03/13/18 19:00	
ASTM D2974-87	Percent Moisture	17.4	%	0.10	03/13/18 10:48	
92376321008	**SS-107-48**					
EPA 8260	Trichloroethene	5750	ug/kg	260	03/12/18 21:54	
ASTM D2974-87	Percent Moisture	23.4	%	0.10	03/13/18 10:49	
92376321009	**SS-106-29**					
EPA 8260	Trichloroethene	172000	ug/kg	6230	03/12/18 20:32	
ASTM D2974-87	Percent Moisture	21.7	%	0.10	03/13/18 10:53	
92376321010	**SS-106-39**					
EPA 8260	Trichloroethene	1140	ug/kg	130	03/12/18 21:13	
ASTM D2974-87	Percent Moisture	16.0	%	0.10	03/13/18 10:53	
92376321011	**SS-106-49**					
EPA 8260	Trichloroethene	5800	ug/kg	262	03/13/18 19:20	
ASTM D2974-87	Percent Moisture	24.0	%	0.10	03/13/18 10:53	
92376321012	**SS-106-55**					
EPA 8260	Trichloroethene	3750	ug/kg	142	03/13/18 19:41	
ASTM D2974-87	Percent Moisture	18.1	%	0.10	03/13/18 10:53	
92376321013	**SS-109-25**					
EPA 8260	Trichloroethene	114000	ug/kg	5320	03/13/18 20:01	
ASTM D2974-87	Percent Moisture	18.5	%	0.10	03/13/18 10:53	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SUMMARY OF DETECTION

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92376321014	**SS-109-35**					
EPA 8260	Trichloroethene	82900	ug/kg	5000	03/13/18 14:54	
ASTM D2974-87	Percent Moisture	15.3	%	0.10	03/13/18 10:53	
92376321015	**SS-109-45**					
EPA 8260	Trichloroethene	3530	ug/kg	127	03/13/18 20:22	
ASTM D2974-87	Percent Moisture	19.7	%	0.10	03/13/18 10:53	
92376321016	**SS-110-24**					
EPA 8260	Trichloroethene	175	ug/kg	138	03/12/18 23:36	
ASTM D2974-87	Percent Moisture	20.1	%	0.10	03/13/18 10:54	
92376321017	**SS-110-34**					
EPA 8260	Trichloroethene	401	ug/kg	137	03/13/18 13:32	
ASTM D2974-87	Percent Moisture	23.2	%	0.10	03/13/18 10:54	
92376321018	**SS-110-38**					
EPA 8260	Trichloroethene	1070	ug/kg	117	03/12/18 22:14	
ASTM D2974-87	Percent Moisture	21.5	%	0.10	03/13/18 10:54	
92376321019	**SS-112-23**					
EPA 8260	Trichloroethene	7.2	ug/kg	5.6	03/12/18 22:33	
ASTM D2974-87	Percent Moisture	29.6	%	0.10	03/13/18 10:54	
92376321020	**SS-112-25**					
EPA 8260	Trichloroethene	15.9	ug/kg	6.0	03/12/18 22:53	
ASTM D2974-87	Percent Moisture	18.9	%	0.10	03/13/18 10:54	

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PROJECT NARRATIVE

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Method: **EPA 8260**
Description: 8260 MSV Low Level
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

General Information:
2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2228298)
  - Vinyl chloride

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

General Information:
20 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: 401519

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

- SS-109-35 (Lab ID: 92376321014)
  - 4-Bromofluorobenzene (S)

QC Batch: 401627

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

- SS-107-28 (Lab ID: 92376321006)
  - 4-Bromofluorobenzene (S)
- SS-108-27 (Lab ID: 92376321002)
  - 4-Bromofluorobenzene (S)
- SS-108-37 (Lab ID: 92376321003)
  - 4-Bromofluorobenzene (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

Additional Comments:

Analyte Comments:

QC Batch: 401627

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SS-110-38 (Lab ID: 92376321018)
  - Toluene-d8 (S)

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: FD-13 **Lab ID: 92376321001** Collected: 03/07/18 00:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**6850**	ug/kg	1260	200		03/13/18 16:57	79-01-6	
Surrogates								
Toluene-d8 (S)	89	%	70-130	1		03/12/18 19:35	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130	1		03/12/18 19:35	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	70-132	1		03/12/18 19:35	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.8**	%	0.10	1		03/13/18 10:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-108-27 **Lab ID: 92376321002** Collected: 03/07/18 09:55 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**190000**	ug/kg	6180	1250		03/13/18 17:17	79-01-6	
Surrogates								
Toluene-d8 (S)	106	%	70-130	25		03/12/18 19:55	2037-26-5	
4-Bromofluorobenzene (S)	213	%	70-130	25		03/12/18 19:55	460-00-4	S1
1,2-Dichloroethane-d4 (S)	114	%	70-132	25		03/12/18 19:55	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**16.1**	%	0.10	1		03/13/18 10:48		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-108-37 **Lab ID: 92376321003** Collected: 03/07/18 10:15 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**132000**	ug/kg	11300	2500		03/13/18 17:38	79-01-6	
Surrogates								
Toluene-d8 (S)	100	%	70-130	50		03/12/18 20:15	2037-26-5	
4-Bromofluorobenzene (S)	193	%	70-130	50		03/12/18 20:15	460-00-4	S1
1,2-Dichloroethane-d4 (S)	106	%	70-132	50		03/12/18 20:15	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.3**	%	0.10	1		03/13/18 10:48		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-108-47 **Lab ID: 92376321004** Collected: 03/07/18 11:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**4450**	ug/kg	1380	250		03/13/18 17:58	79-01-6	
Surrogates								
Toluene-d8 (S)	92	%	70-130	1		03/12/18 20:34	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		03/12/18 20:34	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-132	1		03/12/18 20:34	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.4**	%	0.10	1		03/13/18 10:48		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-108-53 **Lab ID: 92376321005** Collected: 03/07/18 12:30 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**2460**	ug/kg	1700	250		03/13/18 18:19	79-01-6	
Surrogates								
Toluene-d8 (S)	91	%	70-130	1		03/12/18 20:54	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		03/12/18 20:54	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	70-132	1		03/12/18 20:54	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.1**	%	0.10	1		03/13/18 10:48		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-107-28 **Lab ID: 92376321006** Collected: 03/07/18 16:50 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**68600**	ug/kg	5080	1000		03/13/18 18:39	79-01-6	
Surrogates								
Toluene-d8 (S)	101	%	70-130	100		03/12/18 21:14	2037-26-5	
4-Bromofluorobenzene (S)	147	%	70-130	100		03/12/18 21:14	460-00-4	S1
1,2-Dichloroethane-d4 (S)	114	%	70-132	100		03/12/18 21:14	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.6**	%	0.10	1		03/13/18 10:48		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-107-38 **Lab ID: 92376321007** Collected: 03/07/18 17:25 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**2060**	ug/kg	1070	200		03/13/18 19:00	79-01-6	
Surrogates								
Toluene-d8 (S)	93	%	70-130	1		03/12/18 21:34	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		03/12/18 21:34	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-132	1		03/12/18 21:34	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**17.4**	%	0.10	1		03/13/18 10:48		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-107-48 **Lab ID: 92376321008** Collected: 03/07/18 17:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**5750**	ug/kg	260	50		03/12/18 21:54	79-01-6	
Surrogates								
Toluene-d8 (S)	100	%	70-130	50		03/12/18 21:54	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	50		03/12/18 21:54	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-132	50		03/12/18 21:54	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.4**	%	0.10	1		03/13/18 10:49		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-106-29 **Lab ID: 92376321009** Collected: 03/08/18 09:15 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**172000**	ug/kg	6230	1250		03/12/18 20:32	79-01-6	
Surrogates								
Toluene-d8 (S)	109	%	70-130	1250		03/12/18 20:32	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1250		03/12/18 20:32	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-132	1250		03/12/18 20:32	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.7**	%	0.10	1		03/13/18 10:53		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-106-39 **Lab ID: 92376321010** Collected: 03/08/18 09:45 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**1140**	ug/kg	130	25		03/12/18 21:13	79-01-6	
Surrogates								
Toluene-d8 (S)	106	%	70-130	1		03/12/18 20:52	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		03/12/18 20:52	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-132	1		03/12/18 20:52	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**16.0**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-106-49 **Lab ID: 92376321011** Collected: 03/08/18 10:25 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**5800**	ug/kg	262	50		03/13/18 19:20	79-01-6	
Surrogates								
Toluene-d8 (S)	109	%	70-130	50		03/13/18 19:20	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	50		03/13/18 19:20	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	70-132	50		03/13/18 19:20	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**24.0**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-106-55 **Lab ID: 92376321012** Collected: 03/08/18 10:40 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**3750**	ug/kg	142	25		03/13/18 19:41	79-01-6	
Surrogates								
Toluene-d8 (S)	105	%	70-130	25		03/13/18 19:41	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	25		03/13/18 19:41	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-132	25		03/13/18 19:41	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.1**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-109-25 **Lab ID: 92376321013** Collected: 03/08/18 13:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**114000**	ug/kg	5320	1000		03/13/18 20:01	79-01-6	
Surrogates								
Toluene-d8 (S)	105	%	70-130	1000		03/13/18 20:01	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130	1000		03/13/18 20:01	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-132	1000		03/13/18 20:01	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.5**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-109-35 **Lab ID: 92376321014** Collected: 03/08/18 13:30 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**82900**	ug/kg	5000	1000		03/13/18 14:54	79-01-6	
Surrogates								
Toluene-d8 (S)	106	%	70-130	25		03/12/18 22:35	2037-26-5	
4-Bromofluorobenzene (S)	144	%	70-130	25		03/12/18 22:35	460-00-4	S3
1,2-Dichloroethane-d4 (S)	99	%	70-132	25		03/12/18 22:35	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.3**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-109-45 **Lab ID: 92376321015** Collected: 03/08/18 14:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**3530**	ug/kg	127	25		03/13/18 20:22	79-01-6	
Surrogates								
Toluene-d8 (S)	101	%	70-130	25		03/13/18 20:22	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	25		03/13/18 20:22	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-132	25		03/13/18 20:22	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**19.7**	%	0.10	1		03/13/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-110-24 **Lab ID: 92376321016** Collected: 03/08/18 15:20 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**175**	ug/kg	138	25		03/12/18 23:36	79-01-6	
Surrogates								
Toluene-d8 (S)	103	%	70-130	1		03/12/18 23:16	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130	1		03/12/18 23:16	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-132	1		03/12/18 23:16	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**20.1**	%	0.10	1		03/13/18 10:54		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-110-34 **Lab ID: 92376321017** Collected: 03/08/18 16:30 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**401**	ug/kg	137	25		03/13/18 13:32	79-01-6	
Surrogates								
Toluene-d8 (S)	107	%	70-130	1		03/12/18 23:57	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		03/12/18 23:57	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-132	1		03/12/18 23:57	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.2**	%	0.10	1		03/13/18 10:54		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-110-38 **Lab ID: 92376321018** Collected: 03/08/18 16:50 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**1070**	ug/kg	117	25		03/12/18 22:14	79-01-6	
Surrogates								
Toluene-d8 (S)	101	%	70-130	25		03/12/18 22:14	2037-26-5	D3
4-Bromofluorobenzene (S)	103	%	70-130	25		03/12/18 22:14	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-132	25		03/12/18 22:14	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.5**	%	0.10	1		03/13/18 10:54		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-112-23 **Lab ID: 92376321019** Collected: 03/08/18 08:45 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**7.2**	ug/kg	5.6	1		03/12/18 22:33	79-01-6	
Surrogates								
Toluene-d8 (S)	99	%	70-130	1		03/12/18 22:33	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		03/12/18 22:33	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-132	1		03/12/18 22:33	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**29.6**	%	0.10	1		03/13/18 10:54		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: SS-112-25 **Lab ID: 92376321020** Collected: 03/09/18 09:00 Received: 03/09/18 10:46 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Trichloroethene	**15.9**	ug/kg	6.0	1		03/12/18 22:53	79-01-6	
Surrogates								
Toluene-d8 (S)	100	%	70-130	1		03/12/18 22:53	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		03/12/18 22:53	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-132	1		03/12/18 22:53	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.9**	%	0.10	1		03/13/18 10:54		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: TB-11 **Lab ID: 92376321021** Collected: 03/09/18 00:00 Received: 03/09/18 10:46 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:04	156-60-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 12:04	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 12:04	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 12:04	71-55-6	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 12:04	79-01-6	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 12:04	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		03/13/18 12:04	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		03/13/18 12:04	17060-07-0	
Toluene-d8 (S)	120	%	70-130	1		03/13/18 12:04	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Sample: TB-12 **Lab ID: 92376321022** Collected: 03/09/18 00:00 Received: 03/09/18 10:46 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 11:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 11:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 11:47	156-60-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 11:47	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 11:47	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 11:47	71-55-6	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 11:47	79-01-6	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 11:47	75-01-4	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		03/13/18 11:47	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		03/13/18 11:47	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		03/13/18 11:47	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401749 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92376321021, 92376321022

METHOD BLANK: 2228295 Matrix: Water
Associated Lab Samples: 92376321021, 92376321022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Tetrachloroethene	ug/L	ND	1.0	03/13/18 10:40	
Toluene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Trichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Vinyl chloride	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane-d4 (S)	%	101	70-130	03/13/18 10:40	
4-Bromofluorobenzene (S)	%	100	70-130	03/13/18 10:40	
Toluene-d8 (S)	%	110	70-130	03/13/18 10:40	

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	59.7	119	71-129	
1,1-Dichloroethene	ug/L	50	59.4	119	66-135	
cis-1,2-Dichloroethene	ug/L	50	61.3	123	74-124	
Tetrachloroethene	ug/L	50	49.8	100	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	60.3	121	71-127	
Trichloroethene	ug/L	50	56.3	113	78-122	
Vinyl chloride	ug/L	50	60.4	121	50-150	
1,2-Dichloroethane-d4 (S)	%			117	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			93	70-130	

MATRIX SPIKE SAMPLE: 2228298

Parameter	Units	92376381002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	20	23.7	119	70-130	
1,1-Dichloroethene	ug/L	ND	20	25.0	125	70-166	
cis-1,2-Dichloroethene	ug/L	ND	20	24.9	124	70-130	
Tetrachloroethene	ug/L	ND	20	20.9	105	70-130	
Toluene	ug/L	ND	20	21.1	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-130	
Trichloroethene	ug/L	ND	20	23.6	118	69-151	
Vinyl chloride	ug/L	ND	20	26.3	132	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

MATRIX SPIKE SAMPLE: 2228298

Parameter	Units	92376381002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				106	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001 Result	Dup Result	RPD	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	89	95	6	
4-Bromofluorobenzene (S)	%	94	98	4	
Toluene-d8 (S)	%	137	118	15	

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REPORT OF LABORATORY ANALYSIS

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(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401519 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376321009, 92376321010, 92376321014, 92376321016, 92376321017

METHOD BLANK: 2227189 Matrix: Solid
Associated Lab Samples: 92376321009, 92376321010, 92376321014, 92376321016, 92376321017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	6.6	03/12/18 14:02	
1,2-Dichloroethane-d4 (S)	%	92	70-132	03/12/18 14:02	
4-Bromofluorobenzene (S)	%	98	70-130	03/12/18 14:02	
Toluene-d8 (S)	%	102	70-130	03/12/18 14:02	

LABORATORY CONTROL SAMPLE: 2227190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	83.9	77.6	93	67-135	
1,2-Dichloroethane-d4 (S)	%			85	70-132	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2228107 2228108

Parameter	Units	92376321017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Trichloroethene	ug/kg	401	550	550	842	869	80	85	49-167	3	
1,2-Dichloroethane-d4 (S)	%						97	97	70-132		
4-Bromofluorobenzene (S)	%						101	101	70-130		
Toluene-d8 (S)	%						101	98	70-130		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401627 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376321001, 92376321002, 92376321003, 92376321004, 92376321005, 92376321006, 92376321007, 92376321008, 92376321018, 92376321019, 92376321020

METHOD BLANK: 2227751 Matrix: Solid
Associated Lab Samples: 92376321001, 92376321002, 92376321003, 92376321004, 92376321005, 92376321006, 92376321007, 92376321008, 92376321018, 92376321019, 92376321020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	7.2	03/12/18 14:59	
1,2-Dichloroethane-d4 (S)	%	113	70-132	03/12/18 14:59	
4-Bromofluorobenzene (S)	%	103	70-130	03/12/18 14:59	
Toluene-d8 (S)	%	102	70-130	03/12/18 14:59	

LABORATORY CONTROL SAMPLE: 2227752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	70.4	77.5	110	67-135	
1,2-Dichloroethane-d4 (S)	%			102	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 2228174

Parameter	Units	92376321020 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	15.9	21.4	32.5	77	49-167	
1,2-Dichloroethane-d4 (S)	%				87	70-132	
4-Bromofluorobenzene (S)	%				99	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2228173

Parameter	Units	92376321019 Result	Dup Result	RPD	Qualifiers
Trichloroethene	ug/kg	7.2	6.1	17	
1,2-Dichloroethane-d4 (S)	%	103	103	4	
4-Bromofluorobenzene (S)	%	100	102	3	
Toluene-d8 (S)	%	99	102	1	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401775 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376321011, 92376321012, 92376321013, 92376321015

METHOD BLANK: 2228456 Matrix: Solid
Associated Lab Samples: 92376321011, 92376321012, 92376321013, 92376321015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	4.7	03/13/18 12:57	
1,2-Dichloroethane-d4 (S)	%	90	70-132	03/13/18 12:57	
4-Bromofluorobenzene (S)	%	97	70-130	03/13/18 12:57	
Toluene-d8 (S)	%	102	70-130	03/13/18 12:57	

LABORATORY CONTROL SAMPLE: 2228457

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	63	62.3	99	67-135	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2228983

Parameter	Units	92376407009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	ND	18.4	21.6	118	49-167	
1,2-Dichloroethane-d4 (S)	%				96	70-132	
4-Bromofluorobenzene (S)	%				98	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228982

Parameter	Units	92376407008 Result	Dup Result	RPD	Qualifiers
Trichloroethene	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	85	95	7	
4-Bromofluorobenzene (S)	%	98	95	8	
Toluene-d8 (S)	%	110	103	11	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401602
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92376321001

SAMPLE DUPLICATE: 2227567

Parameter	Units	92375352001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	2.2	2.2	0	

SAMPLE DUPLICATE: 2227569

Parameter	Units	92376321001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	23.8	23.4	1	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401606 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92376321002, 92376321003, 92376321004, 92376321005, 92376321006, 92376321007, 92376321008

SAMPLE DUPLICATE: 2227588

Parameter	Units	92376321002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	16.1	14.7	9	

SAMPLE DUPLICATE: 2227589

Parameter	Units	92376203003 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	84.7	84.9	0	

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

QC Batch: 401630 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92376321009, 92376321010, 92376321011, 92376321012, 92376321013, 92376321014, 92376321015, 92376321016, 92376321017, 92376321018, 92376321019, 92376321020

SAMPLE DUPLICATE: 2227764

Parameter	Units	92376321009 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.7	21.9	1	

SAMPLE DUPLICATE: 2227765

Parameter	Units	92376478006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	42.8	39.3	8	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

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 adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
S1	Surrogate recovery outside laboratory control limits (confirmed by re-analysis).
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CTS of AVL 6252162012-Revised Report
Pace Project No.: 92376321

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376321021	**TB-11**	EPA 8260	401749		
92376321022	**TB-12**	EPA 8260	401749		
92376321001	**FD-13**	EPA 8260	401627		
92376321002	**SS-108-27**	EPA 8260	401627		
92376321003	**SS-108-37**	EPA 8260	401627		
92376321004	**SS-108-47**	EPA 8260	401627		
92376321005	**SS-108-53**	EPA 8260	401627		
92376321006	**SS-107-28**	EPA 8260	401627		
92376321007	**SS-107-38**	EPA 8260	401627		
92376321008	**SS-107-48**	EPA 8260	401627		
92376321009	**SS-106-29**	EPA 8260	401519		
92376321010	**SS-106-39**	EPA 8260	401519		
92376321011	**SS-106-49**	EPA 8260	401775		
92376321012	**SS-106-55**	EPA 8260	401775		
92376321013	**SS-109-25**	EPA 8260	401775		
92376321014	**SS-109-35**	EPA 8260	401519		
92376321015	**SS-109-45**	EPA 8260	401775		
92376321016	**SS-110-24**	EPA 8260	401519		
92376321017	**SS-110-34**	EPA 8260	401519		
92376321018	**SS-110-38**	EPA 8260	401627		
92376321019	**SS-112-23**	EPA 8260	401627		
92376321020	**SS-112-25**	EPA 8260	401627		
92376321001	**FD-13**	ASTM D2974-87	401602		
92376321002	**SS-108-27**	ASTM D2974-87	401606		
92376321003	**SS-108-37**	ASTM D2974-87	401606		
92376321004	**SS-108-47**	ASTM D2974-87	401606		
92376321005	**SS-108-53**	ASTM D2974-87	401606		
92376321006	**SS-107-28**	ASTM D2974-87	401606		
92376321007	**SS-107-38**	ASTM D2974-87	401606		
92376321008	**SS-107-48**	ASTM D2974-87	401606		
92376321009	**SS-106-29**	ASTM D2974-87	401630		
92376321010	**SS-106-39**	ASTM D2974-87	401630		
92376321011	**SS-106-49**	ASTM D2974-87	401630		
92376321012	**SS-106-55**	ASTM D2974-87	401630		
92376321013	**SS-109-25**	ASTM D2974-87	401630		
92376321014	**SS-109-35**	ASTM D2974-87	401630		
92376321015	**SS-109-45**	ASTM D2974-87	401630		
92376321016	**SS-110-24**	ASTM D2974-87	401630		
92376321017	**SS-110-34**	ASTM D2974-87	401630		
92376321018	**SS-110-38**	ASTM D2974-87	401630		
92376321019	**SS-112-23**	ASTM D2974-87	401630		
92376321020	**SS-112-25**	ASTM D2974-87	401630		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page ~~1 of 2~~ 1 of 3
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: AMEC Foster

Project #:

WO# : 92376321

92376321

Courier: ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☐ Other: ☑ ~~Client~~

Custody Seal Present? ☑ ~~Yes~~ ☐ No Seals Intact? ☑ ~~Yes~~ ☐ No

Date/Initials Person Examining Contents: 3/4/18 A

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ ~~N/A~~

Thermometer: ☐ IR Gun ID: T027

Type of Ice: ☑ ~~Wet~~ ☐ Blue ☐ None

Cooler Temp (°C): 3.8 | 1.6 Correction Factor: Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 3.8 | 1.6

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ ~~No~~

				Comments/Discrepancy:
Chain of Custody Present?	☑ ~~Yes~~	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☐ ~~Yes~~	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ ~~No~~	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ ~~No~~	☐ N/A	4.
Sufficient Volume?	☑ ~~Yes~~	☐ No	☐ N/A	5.
Correct Containers Used?	☑ ~~Yes~~	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ ~~Yes~~	☐ No	☐ N/A	
Containers Intact?	☐ ~~Yes~~	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ ~~No~~	☐ N/A	8.
Sample Labels Match COC?	☐ Yes	☑ ~~No~~	☐ N/A	9. For Id: 22 - COC says SS-112-25, sample bottles says SS-112-26
-Includes Date/Time/ID/Analysis Matrix: SL				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ ~~N/A~~	10.
Trip Blank Present?	☐ Yes	☐ No	☐ ~~N/A~~	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ ~~N/A~~	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: (TC) Date: 3/12

Project Manager SRF Review: (TF) Date: 3/12

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO#: 92376321**

PM: PTE Due Date: 03/16/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																2												
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12																					1							

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page ~~1 of 2~~ 3 of 3
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO#: 92376321**

PM: PTE Due Date: 03/16/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																					1								
2																2													
3																					1								
4																					1								
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9																					1								
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11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjuted	Amount of Preservative added	Lot #

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.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Amec Foster Wheeler	Report To:	Susan Avritt	Attention:	Susan Avritt
Address:	1308 Patton Avenue	Copy To:		Company Name:	Amec Foster Wheeler
	Asheville, NC 28806			Address:	susan.avritt@amecfw.com
Email To:	susan.avritt@amecfw.com	Purchase Order No.:	not required	Pace Quote Reference:	
Phone:	828-252-8130 Fax:	Project Name:	CTS of Asheville	Pace Project Manager:	Taylor Ezell
Requested Due Date/TAT:	standard	Project Number:	6252162012	Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER

Site Location STATE: NC

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCE by EPA 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92376321
1	TB-11					1/6/18	REP		2				X					X			021
2	FD-13					3/7/18	00:00		6	3					2	1		X			001
3	SS-108-27					3/7/18	955		6	3					2	1		X			002
4	SS-108-37					3/7/18	1015		6	3					2	1		X			003
5	SS-108-47					3/7/18	1100		6	3					2	1		X			004
6	SS-108-53					3/7/18	1230		6	3					2	1		X			005
7	SS-107-28					3/7/18	1650		6	3					2	1		X			006
8	SS-107-38					3/7/18	1725		6	3					2	1		X			007
9	SS-108-48					3/7/18	1400		6	3					2	1		X			008
10	SS-106-29					3/8/18	915		6	3					2	1		X			009
11	SS-106-39					3/8/18	945		6	3					2	1		X			010
12	SS-106-49					3/8/18	1025		6	3					2	1		X			011

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Level IV data package		3/9/18	1046	AWilson/Paan	3/9/18	1046	3.8/1.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Susan Avritt

SIGNATURE of SAMPLER: Susan Avritt DATE Signed (MM/DD/YY): 3/8/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Amec Foster Wheeler	Report To:	Susan Avritt	Attention:	Susan Avritt
Address:	1308 Patton Avenue	Copy To:		Company Name:	Amec Foster Wheeler
	Asheville, NC 28806			Address:	susan.avritt@amecfw.com
Email To:	susan.avritt@amecfw.com	Purchase Order No.:	not required	Pace Quote Reference:	
Phone:	828-252-8130 Fax:	Project Name:	CTS of Asheville	Pace Project Manager:	Taylor Ezell
Requested Due Date/TAT:	standard	Project Number:	6252162012	Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER

Site Location STATE: NC

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCE by EPA 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92376321
1	SS-106-55	SL				3/8/18	1040		6	3					2	1		X	X		012
2	TB-12	W				Ice prep			2				2					X	X		022
3	SS-109-25	SL				3/8/18	1300		6	3					2	1		X	X		013
4	SS-109-35	SL				3/8/18	1330		6	3					2	1		X	X		014
5	SS-109-45	SL				3/8/18	1400		6	3					2	1		X	X		015
6	SS-110-24	SL				3/8/18	1520		6	3					2	1		X	X		016
7	SS-110-34	SL				3/8/18	1630		6	3					2	1		X	X		017
8	SS-110-38	SL				3/8/18	1650		6	3					2	1		X	X		018
9	SS-112-23	SL				3/8/18	845		6	3					2	1		X	X		019
10	SS-112-25	SL				3/9/18	900		6	3					2	1		X	X		020
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Level IV data package				A Wilson/Pace	3/9/18	1046	3.8/1.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Susan Avritt

SIGNATURE of SAMPLER: Susan Avritt DATE Signed (MM/DD/YY): 3/8/18

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 20, 2018

Susan Avritt
Amec Foster Wheeler
1308 Patton Avenue
Asheville, NC 28806

RE: Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Dear Susan Avritt:
Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 2018. 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,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92376660001	**SS-113-23**	Solid	03/09/18 00:00	03/13/18 13:00
92376660002	**SS-113-26**	Solid	03/09/18 11:15	03/13/18 13:00
92376660003	**SS-114-24**	Solid	03/09/18 14:10	03/13/18 13:00
92376660004	**SS-114-34**	Solid	03/09/18 15:10	03/13/18 13:00
92376660005	**SS-114-41**	Solid	03/09/18 16:00	03/13/18 13:00
92376660006	**SS-116-21**	Solid	03/12/18 10:30	03/13/18 13:00
92376660007	**SS-119-28**	Solid	03/12/18 14:20	03/13/18 13:00
92376660008	**SS-119-38**	Solid	03/12/18 14:45	03/13/18 13:00
92376660009	**SS-119-48**	Solid	03/12/18 15:20	03/13/18 13:00
92376660010	**SS-120-35**	Solid	03/12/18 17:45	03/13/18 13:00
92376660011	**FD-14**	Solid	03/09/18 00:00	03/13/18 13:00
92376660012	**FD-15**	Solid	03/09/18 00:00	03/13/18 13:00
92376660013	**TB-13**	Water	03/09/18 00:00	03/13/18 13:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376660001	**SS-113-23**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660002	**SS-113-26**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660003	**SS-114-24**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660004	**SS-114-34**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660005	**SS-114-41**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660006	**SS-116-21**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660007	**SS-119-28**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660008	**SS-119-38**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660009	**SS-119-48**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660010	**SS-120-35**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660011	**FD-14**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660012	**FD-15**	EPA 8260	DLK	4	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92376660013	**TB-13**	EPA 8260	GAW	11	PASI-C

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SUMMARY OF DETECTION

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92376660001	**SS-113-23**					
EPA 8260	Trichloroethene	56800	ug/kg	6480	03/15/18 15:33	
ASTM D2974-87	Percent Moisture	21.7	%	0.10	03/15/18 10:41	
92376660002	**SS-113-26**					
EPA 8260	Trichloroethene	2660	ug/kg	134	03/14/18 21:21	
ASTM D2974-87	Percent Moisture	18.8	%	0.10	03/15/18 10:41	
92376660003	**SS-114-24**					
EPA 8260	Trichloroethene	32300	ug/kg	2570	03/15/18 15:53	
ASTM D2974-87	Percent Moisture	16.7	%	0.10	03/15/18 10:41	
92376660004	**SS-114-34**					
EPA 8260	Trichloroethene	21700	ug/kg	12300	03/16/18 12:59	
ASTM D2974-87	Percent Moisture	18.8	%	0.10	03/15/18 10:41	
92376660005	**SS-114-41**					
EPA 8260	Trichloroethene	833	ug/kg	527	03/16/18 13:19	
ASTM D2974-87	Percent Moisture	24.2	%	0.10	03/15/18 10:41	
92376660006	**SS-116-21**					
EPA 8260	Trichloroethene	1610	ug/kg	269	03/15/18 16:52	
ASTM D2974-87	Percent Moisture	18.8	%	0.10	03/15/18 10:41	
92376660007	**SS-119-28**					
EPA 8260	Trichloroethene	4.5J	ug/kg	4.8	03/14/18 17:53	
ASTM D2974-87	Percent Moisture	16.1	%	0.10	03/15/18 10:41	
92376660008	**SS-119-38**					
EPA 8260	Trichloroethene	27600	ug/kg	1250	03/15/18 17:11	
ASTM D2974-87	Percent Moisture	23.5	%	0.10	03/15/18 10:42	
92376660009	**SS-119-48**					
EPA 8260	Trichloroethene	2480	ug/kg	114	03/14/18 18:32	
ASTM D2974-87	Percent Moisture	16.7	%	0.10	03/15/18 10:42	
92376660010	**SS-120-35**					
EPA 8260	Trichloroethene	7850	ug/kg	951	03/15/18 17:31	
ASTM D2974-87	Percent Moisture	10.0	%	0.10	03/15/18 10:42	
92376660011	**FD-14**					
EPA 8260	Trichloroethene	103000	ug/kg	3660	03/19/18 14:29	
ASTM D2974-87	Percent Moisture	23.7	%	0.10	03/15/18 10:42	
92376660012	**FD-15**					
EPA 8260	Trichloroethene	3520	ug/kg	238	03/15/18 17:51	
ASTM D2974-87	Percent Moisture	22.0	%	0.10	03/15/18 10:42	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Method: **EPA 8260**
Description: 8260 MSV Low Level
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

General Information:
1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

General Information:
12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: 401929

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).
- SS-113-23 (Lab ID: 92376660001)
  - 4-Bromofluorobenzene (S)

QC Batch: 401942

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).
- SS-114-24 (Lab ID: 92376660003)
  - 4-Bromofluorobenzene (S)
- SS-114-34 (Lab ID: 92376660004)
  - 4-Bromofluorobenzene (S)
  - Toluene-d8 (S)
- SS-119-38 (Lab ID: 92376660008)
  - 4-Bromofluorobenzene (S)
- SS-120-35 (Lab ID: 92376660010)
  - 4-Bromofluorobenzene (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

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PROJECT NARRATIVE

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Pace Project No.: 92376660

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: Amec Foster Wheeler, Asheville
Date: March 20, 2018

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-113-23 **Lab ID: 92376660001** Collected: 03/09/18 00:00 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**56800**	ug/kg	6480	2720	1250		03/15/18 15:33	79-01-6	
Surrogates									
Toluene-d8 (S)	109	%	70-130		25		03/14/18 20:40	2037-26-5	
4-Bromofluorobenzene (S)	157	%	70-130		25		03/14/18 20:40	460-00-4	S1
1,2-Dichloroethane-d4 (S)	114	%	70-132		25		03/14/18 20:40	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.7**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-113-26 **Lab ID: 92376660002** Collected: 03/09/18 11:15 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**2660**	ug/kg	134	56.2	25		03/14/18 21:21	79-01-6	
Surrogates									
Toluene-d8 (S)	104	%	70-130		1		03/14/18 21:00	2037-26-5	
4-Bromofluorobenzene (S)	130	%	70-130		1		03/14/18 21:00	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-132		1		03/14/18 21:00	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.8**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-114-24 **Lab ID: 92376660003** Collected: 03/09/18 14:10 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**32300**	ug/kg	2570	1080	500		03/15/18 15:53	79-01-6	
Surrogates									
Toluene-d8 (S)	111	%	70-130		25		03/14/18 16:34	2037-26-5	
4-Bromofluorobenzene (S)	238	%	70-130		25		03/14/18 16:34	460-00-4	S1
1,2-Dichloroethane-d4 (S)	110	%	70-132		25		03/14/18 16:34	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.7**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-114-34 **Lab ID: 92376660004** Collected: 03/09/18 15:10 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**21700**	ug/kg	12300	5160	2500		03/16/18 12:59	79-01-6	
Surrogates									
Toluene-d8 (S)	1480	%	70-130		1		03/14/18 16:54	2037-26-5	IO,S1
Toluene-d8 (S)	101	%	70-130		2500		03/16/18 12:59	2037-26-5	
4-Bromofluorobenzene (S)	308	%	70-130		1		03/14/18 16:54	460-00-4	S1
1,2-Dichloroethane-d4 (S)	111	%	70-132		1		03/14/18 16:54	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.8**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-114-41 **Lab ID: 92376660005** Collected: 03/09/18 16:00 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**833**	ug/kg	527	222	100		03/16/18 13:19	79-01-6	
Surrogates									
Toluene-d8 (S)	79	%	70-130		1		03/14/18 17:13	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		1		03/14/18 17:13	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	70-132		1		03/14/18 17:13	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.2**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-116-21 **Lab ID: 92376660006** Collected: 03/12/18 10:30 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**1610**	ug/kg	269	113	50		03/15/18 16:52	79-01-6	
Surrogates									
Toluene-d8 (S)	93	%	70-130		1		03/14/18 17:33	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130		1		03/14/18 17:33	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-132		1		03/14/18 17:33	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.8**	%	0.10	0.10	1		03/15/18 10:41		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-119-28 **Lab ID: 92376660007** Collected: 03/12/18 14:20 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**4.5J**	ug/kg	4.8	2.0	1		03/14/18 17:53	79-01-6	
Surrogates									
Toluene-d8 (S)	100	%	70-130		1		03/14/18 17:53	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		03/14/18 17:53	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-132		1		03/14/18 17:53	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.1**	%	0.10	0.10	1		03/15/18 10:41		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-119-38 **Lab ID: 92376660008** Collected: 03/12/18 14:45 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**27600**	ug/kg	1250	527	250		03/15/18 17:11	79-01-6	
Surrogates									
Toluene-d8 (S)	105	%	70-130		25		03/14/18 18:12	2037-26-5	
4-Bromofluorobenzene (S)	201	%	70-130		25		03/14/18 18:12	460-00-4	S1
1,2-Dichloroethane-d4 (S)	97	%	70-132		25		03/14/18 18:12	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.5**	%	0.10	0.10	1		03/15/18 10:42		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-119-48 **Lab ID: 92376660009** Collected: 03/12/18 15:20 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**2480**	ug/kg	114	48.0	25		03/14/18 18:32	79-01-6	
Surrogates									
Toluene-d8 (S)	100	%	70-130		25		03/14/18 18:32	2037-26-5	
4-Bromofluorobenzene (S)	108	%	70-130		25		03/14/18 18:32	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-132		25		03/14/18 18:32	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.7**	%	0.10	0.10	1		03/15/18 10:42		

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: SS-120-35 **Lab ID: 92376660010** Collected: 03/12/18 17:45 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**7850**	ug/kg	951	400	200		03/15/18 17:31	79-01-6	
Surrogates									
Toluene-d8 (S)	104	%	70-130		25		03/14/18 18:52	2037-26-5	
4-Bromofluorobenzene (S)	168	%	70-130		25		03/14/18 18:52	460-00-4	S1
1,2-Dichloroethane-d4 (S)	101	%	70-132		25		03/14/18 18:52	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**10.0**	%	0.10	0.10	1		03/15/18 10:42		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: FD-14 **Lab ID: 92376660011** Collected: 03/09/18 00:00 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**103000**	ug/kg	3660	1540	500		03/19/18 14:29	79-01-6	
Surrogates									
Toluene-d8 (S)	108	%	70-130		500		03/19/18 14:29	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		500		03/19/18 14:29	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-132		500		03/19/18 14:29	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.7**	%	0.10	0.10	1		03/15/18 10:42		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: FD-15 **Lab ID: 92376660012** Collected: 03/09/18 00:00 Received: 03/13/18 13:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Trichloroethene	**3520**	ug/kg	238	100	50		03/15/18 17:51	79-01-6	
Surrogates									
Toluene-d8 (S)	86	%	70-130		1		03/14/18 19:31	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		1		03/14/18 19:31	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-132		1		03/14/18 19:31	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.0**	%	0.10	0.10	1		03/15/18 10:42		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Sample: TB-13 **Lab ID: 92376660013** Collected: 03/09/18 00:00 Received: 03/13/18 13:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		03/17/18 15:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		03/17/18 15:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		03/17/18 15:10	156-60-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		03/17/18 15:10	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		03/17/18 15:10	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		03/17/18 15:10	71-55-6	
Trichloroethene	ND	ug/L	1.0	0.47	1		03/17/18 15:10	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		03/17/18 15:10	75-01-4	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		03/17/18 15:10	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		03/17/18 15:10	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		03/17/18 15:10	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

QC Batch: 402427 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92376660013

METHOD BLANK: 2232321 Matrix: Water
Associated Lab Samples: 92376660013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	1.0	0.48	03/17/18 10:45	
1,1-Dichloroethene	ug/L	ND	1.0	0.56	03/17/18 10:45	
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	03/17/18 10:45	
Tetrachloroethene	ug/L	ND	1.0	0.46	03/17/18 10:45	
Toluene	ug/L	ND	1.0	0.26	03/17/18 10:45	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	03/17/18 10:45	
Trichloroethene	ug/L	ND	1.0	0.47	03/17/18 10:45	
Vinyl chloride	ug/L	ND	1.0	0.62	03/17/18 10:45	
1,2-Dichloroethane-d4 (S)	%	106	70-130		03/17/18 10:45	
4-Bromofluorobenzene (S)	%	97	70-130		03/17/18 10:45	
Toluene-d8 (S)	%	105	70-130		03/17/18 10:45	

LABORATORY CONTROL SAMPLE: 2232322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	49.2	98	71-129	
1,1-Dichloroethene	ug/L	50	49.0	98	66-135	
cis-1,2-Dichloroethene	ug/L	50	46.8	94	74-124	
Tetrachloroethene	ug/L	50	47.6	95	78-122	
Toluene	ug/L	50	47.8	96	80-121	
trans-1,2-Dichloroethene	ug/L	50	46.1	92	71-127	
Trichloroethene	ug/L	50	51.1	102	78-122	
Vinyl chloride	ug/L	50	48.4	97	50-150	
1,2-Dichloroethane-d4 (S)	%			108	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2232324

Parameter	Units	30246181003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	20	23.1	116	70-130	
1,1-Dichloroethene	ug/L	ND	20	24.6	123	70-166	
cis-1,2-Dichloroethene	ug/L	ND	20	22.8	114	70-130	
Tetrachloroethene	ug/L	ND	20	21.2	106	70-130	
Toluene	ug/L	ND	20	22.1	110	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	23.5	117	70-130	
Trichloroethene	ug/L	ND	20	22.8	114	69-151	
Vinyl chloride	ug/L	ND	20	23.3	117	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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QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

MATRIX SPIKE SAMPLE: 2232324

Parameter	Units	30246181003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%				110	70-130	
4-Bromofluorobenzene (S)	%				102	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2232323

Parameter	Units	30246181002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	14.7	13.6	7	30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	105	108	3		
4-Bromofluorobenzene (S)	%	96	105	9		
Toluene-d8 (S)	%	103	107	4		

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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

QC Batch: 401929 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376660001, 92376660002

METHOD BLANK: 2229310 Matrix: Solid
Associated Lab Samples: 92376660001, 92376660002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	9.0	3.8	03/14/18 17:15	
1,2-Dichloroethane-d4 (S)	%	97	70-132		03/14/18 17:15	
4-Bromofluorobenzene (S)	%	91	70-130		03/14/18 17:15	
Toluene-d8 (S)	%	105	70-130		03/14/18 17:15	

LABORATORY CONTROL SAMPLE: 2229311

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	50.6	67.5	133	67-135	
1,2-Dichloroethane-d4 (S)	%			98	70-132	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2229312 2229313

Parameter	Units	92376660002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/kg	2660	536	536	3240	3070	108	77	49-167	5	30	
1,2-Dichloroethane-d4 (S)	%						99	92	70-132			
4-Bromofluorobenzene (S)	%						100	101	70-130			
Toluene-d8 (S)	%						101	99	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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

QC Batch: 401942 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376660003, 92376660004, 92376660005, 92376660006, 92376660007, 92376660008, 92376660009, 92376660010, 92376660012

METHOD BLANK: 2229408 Matrix: Solid
Associated Lab Samples: 92376660003, 92376660004, 92376660005, 92376660006, 92376660007, 92376660008, 92376660009, 92376660010, 92376660012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	6.5	2.7	03/14/18 15:35	
1,2-Dichloroethane-d4 (S)	%	111	70-132		03/14/18 15:35	
4-Bromofluorobenzene (S)	%	97	70-130		03/14/18 15:35	
Toluene-d8 (S)	%	100	70-130		03/14/18 15:35	

LABORATORY CONTROL SAMPLE: 2229409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	59.1	62.9	106	67-135	
1,2-Dichloroethane-d4 (S)	%			104	70-132	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 2230253

Parameter	Units	92376778002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	ND	19.1	20.9	109	49-167	
1,2-Dichloroethane-d4 (S)	%				108	70-132	
4-Bromofluorobenzene (S)	%				94	70-130	
Toluene-d8 (S)	%				98	70-130	

SAMPLE DUPLICATE: 2230252

Parameter	Units	92376778001 Result	Dup Result	RPD	Max RPD	Qualifiers
Trichloroethene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	98	101	8		
4-Bromofluorobenzene (S)	%	97	96	12		
Toluene-d8 (S)	%	100	103	8		

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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

QC Batch: 402540 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92376660011

METHOD BLANK: 2232674 Matrix: Solid
Associated Lab Samples: 92376660011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	4.4	1.9	03/19/18 12:06	
1,2-Dichloroethane-d4 (S)	%	90	70-132		03/19/18 12:06	
4-Bromofluorobenzene (S)	%	96	70-130		03/19/18 12:06	
Toluene-d8 (S)	%	104	70-130		03/19/18 12:06	

LABORATORY CONTROL SAMPLE: 2232675

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	68.7	66.9	97	67-135	
1,2-Dichloroethane-d4 (S)	%			94	70-132	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 2233166

Parameter	Units	92377137001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	ND	26	20.1	78	49-167	
1,2-Dichloroethane-d4 (S)	%				95	70-132	
4-Bromofluorobenzene (S)	%				97	70-130	
Toluene-d8 (S)	%				98	70-130	

SAMPLE DUPLICATE: 2233165

Parameter	Units	92376989006 Result	Dup Result	RPD	Max RPD	Qualifiers
Trichloroethene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	100	96	2		
4-Bromofluorobenzene (S)	%	94	99	8		
Toluene-d8 (S)	%	101	107	9		

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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

QC Batch: 401934 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92376660001, 92376660002, 92376660003, 92376660004, 92376660005, 92376660006, 92376660007, 92376660008, 92376660009, 92376660010, 92376660011, 92376660012

SAMPLE DUPLICATE: 2229353

Parameter	Units	35379288003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.2	4.4	4	25	

SAMPLE DUPLICATE: 2229354

Parameter	Units	92376543001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.1	4.3	31	25	R1

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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

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 adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

IO	The internal standard response was outside the laboratory acceptance limits confirmed by reanalysis. The results reported are from the most QC compliant analysis.
R1	RPD value was outside control limits.
S1	Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CTS of AVL 6252162012
Pace Project No.: 92376660

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376660013	**TB-13**	EPA 8260	402427		
92376660001	**SS-113-23**	EPA 8260	401929		
92376660002	**SS-113-26**	EPA 8260	401929		
92376660003	**SS-114-24**	EPA 8260	401942		
92376660004	**SS-114-34**	EPA 8260	401942		
92376660005	**SS-114-41**	EPA 8260	401942		
92376660006	**SS-116-21**	EPA 8260	401942		
92376660007	**SS-119-28**	EPA 8260	401942		
92376660008	**SS-119-38**	EPA 8260	401942		
92376660009	**SS-119-48**	EPA 8260	401942		
92376660010	**SS-120-35**	EPA 8260	401942		
92376660011	**FD-14**	EPA 8260	402540		
92376660012	**FD-15**	EPA 8260	401942		
92376660001	**SS-113-23**	ASTM D2974-87	401934		
92376660002	**SS-113-26**	ASTM D2974-87	401934		
92376660003	**SS-114-24**	ASTM D2974-87	401934		
92376660004	**SS-114-34**	ASTM D2974-87	401934		
92376660005	**SS-114-41**	ASTM D2974-87	401934		
92376660006	**SS-116-21**	ASTM D2974-87	401934		
92376660007	**SS-119-28**	ASTM D2974-87	401934		
92376660008	**SS-119-38**	ASTM D2974-87	401934		
92376660009	**SS-119-48**	ASTM D2974-87	401934		
92376660010	**SS-120-35**	ASTM D2974-87	401934		
92376660011	**FD-14**	ASTM D2974-87	401934		
92376660012	**FD-15**	ASTM D2974-87	401934		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page ~~1 of 2~~ 1 of 3
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Amec Foster

Project #

WO# : 92376660

92376660

Courier: ☐ Commercial ☐ Fed Ex ☐ Pace ☐ UPS ☐ USPS ☐ Other:____ ☑ Client

Custody Seal Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Date/Initials Person Examining Contents: 3/13/18 A

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: T027

Type of Ice: ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 0.2 Correction Factor: Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 0.2

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

		Comments/Discrepancy:
Chain of Custody Present?	☑ Yes ☐ No ☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes ☐ No ☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes ☑ No ☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes ☑ No ☐ N/A	4.
Sufficient Volume?	☑ Yes ☐ No ☐ N/A	5.
Correct Containers Used?	☑ Yes ☐ No ☐ N/A	6.
-Pace Containers Used?	☑ Yes ☐ No ☐ N/A	
Containers Intact?	☑ Yes ☐ No ☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes ☑ No ☐ N/A	8.
Sample Labels Match COC?	☑ Yes ☐ No ☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: SL/WT		
Headspace in VOA Vials (>5-6mm)?	☐ Yes ☑ No ☐ N/A	10.
Trip Blank Present?	☑ Yes ☐ No ☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes ☐ No ☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: TR TR Date: 3/14

~~Project Manager SRF Review:~~ _____ Date: 3/14

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2 2 of 3
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # WO# : 92376660

PM: PTE Due Date: 03/20/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
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2																					1								
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pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page ~~1 of 2~~ 3 of 3
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO# : 92376660**

PM: PTE **Due Date: 03/20/18**

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
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pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

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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Page: 1 of 2

2086304

Section A Required Client Information:
Company: Amec Foster Wheeler
Address: 1308 Patton Avenue
Asheville, NC 28805
Email To: rodney.clark@woodplc.com
Phone: 828.252-8130 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:
Report To: Susan Avritt
Copy To:
Purchase Order No.:
Project Name: CTS of Asheville
Project Number: 62521620012

Section C Invoice Information:
Attention: Susan Avritt
Company Name: Amec Foster Wheeler
Address: 1308 Patton Ave. Asheville
Pace Quote Reference:
Pace Project Manager: Taylor Ezell
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER USEPA
Site Location STATE: NC

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: TCE via 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	TB-13	WT	G			Lab Prepared			2				✓						NA	9237666 013
2	SS-113-23	SL	G	3/9/18		3/9/18	1100		6						✓	✓	✓			001
3	SS-113-26	SL	G			3/9/18	1115		18						✓	✓	✓			002
4	SS-114-24	SL	G			3/9/18	1410		6						✓	✓	✓			003
5	SS-114-34	SL	G			3/9/18	1510		6						✓	✓	✓			004
6	SS-114-41	SL	G			3/9/18	1600		6						✓	✓	✓			005
7	SS-116-21	SL	G			3/12/18	1030		6						✓	✓	✓			006
8	SS-119-28	SL	G			3/12/18	1420		6						✓	✓	✓			007
9	SS-119-38	SL	G			3/12/18	1445		6						✓	✓	✓			008
10	SS-119-48	SL	G			3/12/18	1520		6						✓	✓	✓			009
11	SS-120-35	SL	G			3/12/18	1745		6						✓	✓	✓			010
12	FD-14	SL	G			3/9/18	00:00		6						✓	✓	✓			011

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
TCE=trichloroethylene		3/13/18	1300		3/13/18	1300	0.2	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Rodney M. Clark
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 3/13/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2

2086305

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Amec Foster Wheeler	Report To: Susan Avritt	Attention: Susan Avritt
Address: 1308 Patton Avenue Asheville, NC 28805	Copy To:	Company Name: Amec Foster Wheeler
Email To: rodney.clark@woodplc.com	Purchase Order No.:	Address: 1308 Patton Ave., Asheville NC
Phone: 828-252-5130 Fax:	Project Name: CTS of Asheville	Pace Quote Reference:
Requested Due Date/TAT: Standard	Project Number: 625216.2012	Pace Project Manager: Taylor Ezell
		Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER USEPA

Site Location STATE: N

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: TCE Via 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FD-15		SL	G			3/9/18	00:00		6						V	V	V		X		92376660 C12
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
TCE = trichloroethylene		3/13/18	1300		3/13/18	1300	0.2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Rodney M. Clark

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 3/13/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

ATTACHMENT 3

SOIL DATA VALIDATION REPORT

DATA VALIDATION REPORT
ERH Interim Remedial Action Baseline Soil Sampling
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

Introduction

Soil samples were collected at the CTS of Asheville, Inc. Superfund Site (Site) in Asheville, North Carolina, in March 2018 and submitted for off-site laboratory analysis. Samples were analyzed by Pace Analytical Services located in Huntersville, North Carolina. Results were reported in the following Sample Delivery Groups (SDGs): 92375814, 92376321, and 92376660.

A listing of samples included in this Data Validation Report is presented in Table 2.1. Data were evaluated using project quality control limits summarized in Table 2.2. A summary of the final validated analytical results is presented in Table 2.3. Samples were analyzed by the following method:

- Volatile organic compounds (VOCs) by USEPA Method 8260 (trichloroethene only)

Data validation was completed based on general procedures in the USEPA Region 4 Data Validation Standard Operating Procedures (SOP) for Organic Analysis (USEPA, 2016), Method 8260, and the CTS of Asheville Quality Assurance Project Plan (QAPP) [Amec Foster Wheeler, 2018]. Data validation included the following evaluations:

- lab report narrative
- sample collection and chain of custody (COC)
- data package completeness
- holding times
- instrument tuning
- initial and continuing calibrations
- QC blanks
- system monitoring compound recovery
- laboratory control samples
- matrix spike/matrix spike duplicates (MS/MSD)
- laboratory duplicates
- field duplicates
- internal standard response and retention time
- data transcription
- raw data and calculation checks
- electronic data reporting
- result reporting
- reporting limits
- data qualification

The following laboratory or data validation qualifiers are used in the final data presentation:

U = target analyte is not detected at the reported detection limit
J = estimated value

Results are interpreted to be usable as reported by the laboratory unless discussed in the following section.

Data Validation Results

Data validation qualification actions were applied to a subset of samples as discussed in the following sections. A summary of data validation actions, qualifications, and qualification reason codes is presented on Table 2.4.

Sample Collection and COC
In lab report 92375814, the Sample IDs were written on the COC forms with codes beginning with SB. The lab was instructed to change the codes to begin with SS by the project lead to match code specifications in the QAPP. Sample ID codes reported in the final data are listed as SS as indicated on Table 2.1.

In lab report 92376321, Sample SS-107-48 was listed as SS-108-48 on the COC form. This was corrected in the final data set as indicated on Table 2.1.

In lab report 92376321, Sample SS-112-23 had a sample date of 3/8/18 reported by the laboratory. The actual sample date was 3/9/18. This was corrected in the final data set as indicated on Table 2.1.

For the trip blanks, eight target compounds are reported by the laboratory. The COC requested only TCE. Other target compounds were removed from the final results.

Results Reporting
The result for TCE in sample SS-111-45 exceeded the calibration range. The laboratory qualified the result as E. This result was qualified as estimated (J) in the final data set.

Instrument Tuning
The tuning criteria provided by Pace match the tuning criteria listed in Method 8260. Tuning results were also compared to USEPA Region 4 control limits during data validation. Instrument tune results for all mass/charge (m/z) ratios were within control limits for percent relative abundance as stated in Method 8260 and in the USEPA Region 4 SOP for all instrument tunes.

LCS
In lab report 92376660, the LCS recovery in batch 401929 (133%) was greater than the project limits of 70-130 percent indicating a slight high bias. Results in associated samples SS-113-23 and SS-113-26 were qualified as estimated values (J+) with reason code LCS-H.

Field Duplicate Precision

Four field duplicates were collected. A summary of field duplicate results is presented on Table 2.5. The relative percent difference (RPD) for results in one of four duplicate pairs was less than the project precision goal of 50. Results from three duplicate pairs exceeded the RPD goal indicating that there is some uncertainty in the field sampling and analytical precision of the TCE measurements in the soil matrix. TCE results for samples SS-115-34, SS-113-23, and SS-114-41 and the associated field duplicates are qualified as estimated (J) with reason code FD. Sampling and analytical variability uncertainties should be considered when using the soil results to complete assessments.

References

Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec Foster Wheeler), 2018. "Electrical Resistance Heating Remedial Action Work Plan; Appendix C Quality Assurance Project Plan;" January 17, 2018.

USEPA Region 4, 2016. "Data Validation Standard Operating Procedures for Contract Laboratory Organic Data Using Gas Chromatograph/Mass Spectrometer and Gas Chromatograph/Electron Capture Detector"; Science and Ecosystem Support Division, Quality Assurance Section, QAS-SOP-0025, Revision 0.0, 2/16/2016.

Data Validator: Chris Ricardi, NRCC-EAC

Chris Ricardi

Date: April 20, 2018

Reviewed by Julie Ricardi

Julie Ricardi

Date: April 23, 2018

Tables:

Table 2.1 – Sample and Analytical Method Summary
Table 2.2 – Project Quality Control Limits
Table 2.3 – Sample Results
Table 2.4 – Data Validation Action Summary
Table 2.5 – Field Duplicate Summary

TABLE 3.1
Data Validation Report: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample Delivery Group	Sample Location	Field Sample ID	Sample Date	Lab ID	QC Code
92375814	QC	TB-10	03/06/18	92375814012	TB
92375814	SS-111	SS-111-25	03/06/18	92375814007	FS
92375814	SS-111	SS-111-35	03/06/18	92375814008	FS
92375814	SS-111	SS-111-45	03/06/18	92375814009	FS
92375814	SS-111	SS-111-51	03/06/18	92375814010	FS
92375814	SS-115	FD-12	03/06/18	92375814011	FD
92375814	SS-115	SS-115-24	03/06/18	92375814004	FS
92375814	SS-115	SS-115-34	03/06/18	92375814005	FS
92375814	SS-115	SS-115-41	03/06/18	92375814006	FS
92375814	SS-117	SS-117-24	03/05/18	92375814001	FS
92375814	SS-118	SS-118-24	03/05/18	92375814002	FS
92375814	SS-118	SS-118-31	03/05/18	92375814003	FS
92376321	QC	TB-11	03/09/18	92376321021	TB
92376321	QC	TB-12	03/09/18	92376321022	TB
92376321	SS-106	SS-106-29	03/08/18	92376321009	FS
92376321	SS-106	SS-106-39	03/08/18	92376321010	FS
92376321	SS-106	SS-106-49	03/08/18	92376321011	FS
92376321	SS-106	SS-106-55	03/08/18	92376321012	FS
92376321	SS-107	FD-13	03/07/18	92376321001	FD
92376321	SS-107	SS-107-28	03/07/18	92376321006	FS
92376321	SS-107	SS-107-38	03/07/18	92376321007	FS
92376321	SS-107	SS-107-48	03/07/18	92376321008	FS
92376321	SS-108	SS-108-27	03/07/18	92376321002	FS
92376321	SS-108	SS-108-37	03/07/18	92376321003	FS
92376321	SS-108	SS-108-47	03/07/18	92376321004	FS
92376321	SS-108	SS-108-53	03/07/18	92376321005	FS
92376321	SS-109	SS-109-25	03/08/18	92376321013	FS
92376321	SS-109	SS-109-35	03/08/18	92376321014	FS
92376321	SS-109	SS-109-45	03/08/18	92376321015	FS
92376321	SS-110	SS-110-24	03/08/18	92376321016	FS
92376321	SS-110	SS-110-34	03/08/18	92376321017	FS
92376321	SS-110	SS-110-38	03/08/18	92376321018	FS
92376321	SS-112	SS-112-23	03/09/18	92376321019	FS
92376321	SS-112	SS-112-25	03/09/18	92376321020	FS
92376660	QC	TB-13	03/09/18	92376660013	TB
92376660	SS-113	FD-14	03/09/18	92376660011	FD
92376660	SS-113	SS-113-23	03/09/18	92376660001	FS
92376660	SS-113	SS-113-26	03/09/18	92376660002	FS
92376660	SS-114	FD-15	03/09/18	92376660012	FD
92376660	SS-114	SS-114-24	03/09/18	92376660003	FS
92376660	SS-114	SS-114-34	03/09/18	92376660004	FS

TABLE 3.1
Data Validation Report: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample Delivery Group	Sample Location	Field Sample ID	Sample Date	Lab ID	QC Code
92376660	SS-114	SS-114-41	03/09/18	92376660005	FS
92376660	SS-116	SS-116-21	03/12/18	92376660006	FS
92376660	SS-119	SS-119-28	03/12/18	92376660007	FS
92376660	SS-119	SS-119-38	03/12/18	92376660008	FS
92376660	SS-119	SS-119-48	03/12/18	92376660009	FS
92376660	SS-120	SS-120-35	03/12/18	92376660010	FS

QC Codes:
FS = Field sample, FD = Field duplicate, TB = Trip blank

Prepared By: WCG 4/6/18
Checked By: CSR 4/6/18

TABLE 3.2
Data Validation Report: Project Quality Control Limits
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Parameter	QC Test	SOIL %R	Soil RPD
VOC	Surrogate	70-130	---
	LCS/LCSD	70-130	30
	MS/MSD	70-130	50
	Field Duplicate	---	50

Notes:
LCS = laboratory control sample
LCSD = laboratory control sample duplicate
MS = matrix spike
MSD = matrix spike duplicate
%R = percent recovery
RPD = relative percent difference

Prepared By: WCG 4/6/18
Checked By: CSR 4/6/18

TABLE 3.3
Data Validation Report: Summary of Analytical Results (Soil)
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

		Sample Delivery Group	92375814		92375814		92375814		92375814		92375814		92375814	
		Sample Location	QC		SS-111		SS-111		SS-111		SS-111		SS-115	
		Sample Date	03/06/18		03/06/18		03/06/18		03/06/18		03/06/18		03/06/18	
		Field Sample ID	TB-10		SS-111-25		SS-111-35		SS-111-45		SS-111-51		FD-12	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture			23.1		27.3		25.8		17.4		17.2	
EPA 8260	ug/kg	Trichloroethene			38,200		4,320		8,830	J	2,440		8,170	J
EPA 8260	ug/L	Trichloroethene	1	U										

		Sample Delivery Group	92375814		92375814		92375814		92375814		92375814		92375814	
		Sample Location	SS-115		SS-115		SS-115		SS-117		SS-118		SS-118	
		Sample Date	03/06/18		03/06/18		03/06/18		03/05/18		03/05/18		03/05/18	
		Field Sample ID	SS-115-24		SS-115-34		SS-115-41		SS-117-24		SS-118-24		SS-118-31	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	20.2		17.9		15.8		18.0		18.8		16.2	
EPA 8260	ug/kg	Trichloroethene	198,000		14,600	J	727		741,000		149,000		138,000	

		Sample Delivery Group	92376321		92376321		92376321		92376321		92376321		92376321	
		Sample Location	QC		QC		SS-106		SS-106		SS-106		SS-106	
		Sample Date	03/09/18		03/09/18		03/08/18		03/08/18		03/08/18		03/08/18	
		Field Sample ID	TB-11		TB-12		SS-106-29		SS-106-39		SS-106-49		SS-106-55	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture					21.7		16		24		18.1	
EPA 8260	ug/kg	Trichloroethene					172,000		1,140		5,800		3,750	
EPA 8260	ug/L	Trichloroethene	1	U	1	U								

		Sample Delivery Group	92376321		92376321		92376321		92376321		92376321		92376321	
		Sample Location	SS-107		SS-107		SS-107		SS-107		SS-108		SS-108	
		Sample Date	03/07/18		03/07/18		03/07/18		03/07/18		03/07/18		03/07/18	
		Field Sample ID	FD-13		SS-107-28		SS-107-48		SS-107-38		SS-108-27		SS-108-37	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	23.8		21.6		23.4		17.4		16.1		15.3	
EPA 8260	ug/kg	Trichloroethene	6,850		68,600		5,750		2,060		190,000		132,000	

TABLE 3.3
Data Validation Report: Summary of Analytical Results (Soil)
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

		Sample Delivery Group	92376321		92376321		92376321		92376321		92376321		92376321	
		Sample Location	SS-108		SS-108		SS-109		SS-109		SS-109		SS-110	
		Sample Date	03/07/18		03/07/18		03/08/18		03/08/18		03/08/18		03/08/18	
		Field Sample ID	SS-108-47		SS-108-53		SS-109-25		SS-109-35		SS-109-45		SS-110-24	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	13.4		13.1		18.5		15.3		19.7		20.1	
EPA 8260	ug/kg	Trichloroethene	4,450		2,460		114,000		82,900		3,530		175	

		Sample Delivery Group	92376321		92376321		92376321		92376321		92376660		92376660	
		Sample Location	SS-110		SS-110		SS-112		SS-112		QC		SS-113	
		Sample Date	03/08/18		03/08/18		03/08/18		03/09/18		03/09/18		03/09/18	
		Field Sample ID	SS-110-34		SS-110-38		SS-112-23		SS-112-25		TB-13		FD-14	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	23.2		21.5		29.6		18.9				23.7	
EPA 8260	ug/kg	Trichloroethene	401		1,070		7.2		15.9				103,000	J
EPA 8260	ug/L	Trichloroethene									1	U		

		Sample Delivery Group	92376660		92376660		92376660		92376660		92376660		92376660	
		Sample Location	SS-113		SS-113		SS-114		SS-114		SS-114		SS-114	
		Sample Date	03/09/18		03/09/18		03/09/18		03/09/18		03/09/18		03/09/18	
		Field Sample ID	SS-113-23		SS-113-26		FD-15		SS-114-24		SS-114-34		SS-114-41	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	21.7		18.8		22		16.7		18.8		24.2	
EPA 8260	ug/kg	Trichloroethene	56,800	J+	2,660	J+	3,520	J	32,300		21,700		833	J

		Sample Delivery Group	92376660		92376660		92376660		92376660		92376660	
		Sample Location	SS-116		SS-119		SS-119		SS-119		SS-120	
		Sample Date	03/12/18		03/12/18		03/12/18		03/12/18		03/12/18	
		Field Sample ID	SS-116-21		SS-119-28		SS-119-38		SS-119-48		SS-120-35	
Method	**Unit**	**Parameter**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
ASTM D297	Percent	Percent Moisture	18.8		16.1		23.5		16.7		10	
EPA 8260	ug/kg	Trichloroethene	1,610		4.5	J	27,600		2,480		7,850	

Notes:
ug/kg = micrograms per kilogram
ug/L = micrograms per liter

Qualifiers
U = not detected at the detection limit
J = estimated concentration
J+ = estimated biased high

Prepared By: WCG 4/20/18
Checked By: CSR 4/20/18

TABLE 3.4
Data Validation Report: Summary of Qualification Actions
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample Delivery Group	Analysis Method	Lab Sample ID	Field Sample ID	Analyte	Lab Result	Lab Qualifier	Final Result	Final Qualifier	Validation Reason Code
92375814	EPA 8260	92375814011	FD-12	Trichloroethene	8,170		8,170	J	FD
92375814	EPA 8260	92375814009	SS-111-45	Trichloroethene	8,830	E	8,830	J	E
92375814	EPA 8260	92375814005	SS-115-34	Trichloroethene	14,600		14,600	J	FD
92376660	EPA 8260	92376660011	FD-14	Trichloroethene	103,000		103,000	J	FD
92376660	EPA 8260	92376660012	FD-15	Trichloroethene	3,520		3,520	J	FD
92376660	EPA 8260	92376660001	SS-113-23	Trichloroethene	56,800		56,800	J+	LCS-H, FD
92376660	EPA 8260	92376660002	SS-113-26	Trichloroethene	2,660		2,660	J+	LCS-H
92376660	EPA 8260	92376660005	SS-114-41	Trichloroethene	833		833	J	FD

Notes:
Units = icrograms per kilogram (ug/kg)

Qualifiers:
J = estimated
J+ = estimated biased high

Validation Qualifier Reason Codes:

LCS-H	LCS recovery high
E	Result exceeds calibration range
FD	Field Duplicate limit exceeded

Prepared By: WCG 4/20/18
Checked By: CSR 4/20/18

ATTACHMENT 4

GROUNDWATER SAMPLING FIELD DATA RECORDS

FIELD INSTRUMENT CALIBRATION RECORD

Project Name: CTS of Asheville, Inc. Superfund Site Date: 3/28/18

Project Number: 6252-16-2012.05 Name: S.Avrit

Water Quality Meter Calibration

	Standard Value		Meter Value		Acceptance Criteria
Manufacturer: YSI	pH: 4	SU (low)	pH: 3.97	SU	+/- 10% of standard
Model No.: 556 MPS	pH: 7	SU (med)	pH: 7.00	SU	+/- 10% of standard
Unit ID: Pine 36504	pH: 10	SU (high)	pH: 10.00	SU	+/- 10% of standard
	Conductivity: 1.413	mS/cm	Conductivity: 1.412	mS/cm	+/- 10% of standard
	ORP: 240	mV	ORP: 240.5	mV	+/- 10% of standard

Turbidity Meter Calibration

	Standard Value		Meter Value		Acceptance Criteria
Manufacturer: Hach	10	NTU (low)	9.73	NTU	+/- 10% of standard
Model No.: 2100Q	20	NTU (med)	20.3	NTU	+/- 10% of standard
Unit ID: Pine 38244	100	NTU (high)	99.2	NTU	+/- 10% of standard
	800	NTU (high)	799	NTU	+/- 10% of standard

Photoionization Detector

					Acceptance Criteria
Manufacturer:	Background:	ppmv	Meter:	ppmv	within 5 ppmv of Zero
Model No.:	Span Gas:	ppmv	Meter:	ppmv	+/- 10% of standard
Unit ID:					

Calibration Sources

	Source	Value		Lot Number	Expiration Date
pH (low)	Ricca Chemical	4	SU	2703F77	3/2019
pH (med)	Aqua Phoenix	7	SU	8GA687	1/2020
pH (high)	Aqua Phoenix	10	SU	7GF743	6/2019
Conductivity	Aqua Phoenix	1.413	mS/cm	8GA835	1/2019
ORP:	Hanna	240	mV	2062	10/2022
Turbidity (low)	Hach (formazin)	10	NTU	A7069	6/2018
Turbidity (med):	Hach (formazin)	20	NTU	A6351	3/2018
Turbidity (high):	Hach (formazin)	100	NTU	A7144	8/2018
Turbidity (high):	Hach (formazin)	800	NTU	A6355	3/2018
PID gas:			ppmv		

NOTES:

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIELD INSTRUMENT CALIBRATION RECORD

Project Name: CTS of Asheville, Inc. Superfund Site

Project Number: 6252-16-2012.05

Date: 3/30/18

Name: Rodney Clark

Water Quality Meter Calibration

Manufacturer: YSI

Model No.: 556 MPS

Unit ID: Pine 36504

	Standard Value		Meter Value		Acceptance Criteria
pH:	4	SU (low)	pH: 3.97	SU	+/- 10% of standard
pH:	7	SU (med)	pH: 7.03	SU	+/- 10% of standard
pH:	10	SU (high)	pH: 10.01	SU	+/- 10% of standard
Conductivity:	1.413	mS/cm	Conductivity: 1.413	mS/cm	+/- 10% of standard
ORP:	240	mV	ORP: 240.4	mV	+/- 10% of standard

Turbidity Meter Calibration

Manufacturer: Hach

Model No.: 2100Q

Unit ID: Pine 38244

Standard Value		Meter Value		Acceptance Criteria
10.0	NTU (low)	10.0	NTU	+/- 10% of standard
20.0	NTU (med)	20.4	NTU	+/- 10% of standard
100	NTU (high)	102	NTU	+/- 10% of standard
800	NTU (high)	804	NTU	+/- 10% of standard

Photoionization Detector

Manufacturer: _____

Model No.: _____

Unit ID: _____

				Acceptance Criteria
Background:	_____ ppmv	Meter:	_____ ppmv	within 5 ppmv of Zero
Span Gas:	_____ ppmv	Meter:	_____ ppmv	+/- 10% of standard

Calibration Sources

	Source	Value		Lot Number	Expiration Date
pH (low)	Ricca Chemical	4	SU	2703F77	3/2019
pH (med)	Aqua Phoenix	7	SU	8GA687	1/2020
pH (high)	Aqua Phoenix	10	SU	7GF743	6/2019
Conductivity	Aqua Phoenix	1.413	mS/cm	8GA835	1/2019
ORP:	Hanna	240	mV	2062	10/2022
Turbidity (low)	Hach (formazin)	10	NTU	A7069	6/2018
Turbidity (med):	Hach (formazin)	20	NTU	A6351	3/2018
Turbidity (high):	Hach (formazin)	100	NTU	A7144	8/2018
Turbidity (high):	Hach (formazin)	800	NTU	A6355	3/2018
PID gas:			ppmv		

NOTES:

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIELD INSTRUMENT CALIBRATION RECORD

Project Name: CTS of Asheville, Inc. Superfund Site

Project Number: 6252-16-2012.05

Date: 4/2/18

Name: S. Avrit

Water Quality Meter Calibration

Manufacturer: YSI

Model No.: 556 MPS

Unit ID: Pine 36504

	Standard Value		Meter Value		Acceptance Criteria
pH:	4	SU (low)	pH: 4.00	SU	+/- 10% of standard
pH:	7	SU (med)	pH: 7.00	SU	+/- 10% of standard
pH:	10	SU (high)	pH: 10.01	SU	+/- 10% of standard
Conductivity:	1.413	mS/cm	Conductivity: 1.413	mS/cm	+/- 10% of standard
ORP:	240	mV	ORP: 240.1	mV	+/- 10% of standard

Turbidity Meter Calibration

Manufacturer: Hach

Model No.: 2100Q

Unit ID: Pine 38244

Standard Value		Meter Value		Acceptance Criteria
10	NTU (low)	9.58	NTU	+/- 10% of standard
20	NTU (med)	20.3	NTU	+/- 10% of standard
100	NTU (high)	99.9	NTU	+/- 10% of standard
800	NTU (high)	806	NTU	+/- 10% of standard

Photoionization Detector

Manufacturer: _____

Model No.: _____

Unit ID: _____

				Acceptance Criteria
Background:	ppmv	Meter:	ppmv	within 5 ppmv of Zero
Span Gas:	ppmv	Meter:	ppmv	+/- 10% of standard

Calibration Sources

	Source	Value		Lot Number	Expiration Date
pH (low)	Ricca Chemical	4	SU	2703F77	3/2019
pH (med)	Aqua Phoenix	7	SU	8GA687	1/2020
pH (high)	Aqua Phoenix	10	SU	7GF743	6/2019
Conductivity	Aqua Phoenix	1.413	mS/cm	8GA835	1/2019
ORP:	Hanna	240	mV	2062	10/2022
Turbidity (low)	Hach (formazin)	10	NTU	A7069	6/2018
Turbidity (med):	Hach (formazin)	20	NTU	A6351	3/2018
Turbidity (high):	Hach (formazin)	100	NTU	A7144	8/2018
Turbidity (high):	Hach (formazin)	800	NTU	A6355	3/2018
PID gas:			ppmv		

NOTES:

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIELD INSTRUMENT CALIBRATION RECORD

Project Name: CTS of Asheville, Inc. Superfund Site

Project Number: 6252-16-2012.05

Date: 4/3/18

Name: S. Anrith

Water Quality Meter Calibration

Manufacturer: YSI

Model No.: 556 MPS

Unit ID: Pine 36504

	Standard Value		Meter Value		Acceptance Criteria
pH:	4	SU (low)	pH: 4.00	SU	+/- 10% of standard
pH:	7	SU (med)	pH: 7.00	SU	+/- 10% of standard
pH:	10	SU (high)	pH: 10.00	SU	+/- 10% of standard
Conductivity:	1.413	mS/cm	Conductivity: 1.413	mS/cm	+/- 10% of standard
ORP:	240	mV	ORP: 240.0	mV	+/- 10% of standard

Turbidity Meter Calibration

Manufacturer: Hach

Model No.: 2100Q

Unit ID: Pine 38244

Standard Value		Meter Value		Acceptance Criteria
10	NTU (low)	9.87	NTU	+/- 10% of standard
20	NTU (med)	19.9	NTU	+/- 10% of standard
100	NTU (high)	101	NTU	+/- 10% of standard
800	NTU (high)	792	NTU	+/- 10% of standard

Photoionization Detector

Manufacturer: _____

Model No.: _____

Unit ID: _____

				Acceptance Criteria
Background:	ppmv	Meter:	ppmv	within 5 ppmv of Zero
Span Gas:	ppmv	Meter:	ppmv	+/- 10% of standard

Calibration Sources

	Source	Value		Lot Number	Expiration Date
pH (low)	Ricca Chemical	4	SU	2703F77	3/2019
pH (med)	Aqua Phoenix	7	SU	8GA687	1/2020
pH (high)	Aqua Phoenix	10	SU	7GF743	6/2019
Conductivity	Aqua Phoenix	1.413	mS/cm	8GA835	1/2019
ORP:	Hanna	240	mV	2062	10/2022
Turbidity (low)	Hach (formazin)	10	NTU	A7069	6/2018
Turbidity (med):	Hach (formazin)	20	NTU	A6351	3/2018
Turbidity (high):	Hach (formazin)	100	NTU	A7144	8/2018
Turbidity (high):	Hach (formazin)	800	NTU	A6355	3/2018
PID gas:			ppmv		

NOTES:

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

Groundwater and LNAPL Measurement Record

Project: CTS of Asheville, Inc. Superfund Site

Project Number: 6252-16-2012.05

Personnel: S. Avrit / R. Clark

Date: 3/28/18

Monitoring Well ID	Depth to Top of LNAPL	Depth to Bottom of LNAPL/ Top of Water	LNAPL Thickness	Stickup	Notes
MW-2	N/A	13.85	0.0	0.00	
MW-3	19.65	19.71	0.06	0.00	
MW-12	20.47	25.35	4.88	-0.38	
MW-13	N/A	17.57	0.0	-0.32	
MW-14	17.03	17.84	0.81	-0.59	
MW-23	N/A	22.52	trace	+0.53	
MW-23A	N/A	22.01	trace	+ 0.18	
MW-24	N/A	19.83	0.0	-0.06	
MW-24A	N/A	20.25	0.0	+0.22	
MW-25	N/A	18.37	trace	+0.17	
MW-25A	N/A	18.98	0.0	+0.65	
MW-26	N/A	16.95	0.0	0.00	
MW-26A	N/A	20.14	trace	+2.70	
MW-27	N/A	14.82	0.0	-0.21	
MW-28	N/A	17.12	0.0	-0.30	
MW-28A	N/A	17.28	0.0	-0.19	
MW-29	N/A	15.78	trace	-0.56	
MW-29A	N/A	15.78	0.0	-0.58	
MW-30	N/A	17.32	trace	-0.36	
MW-30A	N/A	17.56	0.0	-0.07	
MW-31	N/A	33.05	0.0	-0.15	
MW-31A	N/A	26.00	0.0	+1.02	
MW-32	N/A	30.40	0.0	+2.97	

Depths to be referenced to top of casing and measured in feet.
Thickness measurements in feet.

SAMPLE SUMMARY FORM

Project Name: CTS of Asheville, Inc. Superfund Site

Project Number: 6252-16-2012

Sample ID	Sample Date	Sample Time	Associated QA/QC Sample(s)	Notes/Comments
TB-14	lab prep			
MW-2	3/29/18	10:15	TB-14	
MW-27	3/29/18	12:15	TB-14	
MW-26	3/29/18	14:10	TB-14	MS/MSD
MW-26A	3/29/18	15:15	TB-14/FD-16	
MW-29	3/29/18	16:40	TB-14	
MW-29A	3/30/18	9:50	TB-14	
MW-28	3/30/18	1130	TB-14	
MW-28A	3/30/18	1315	TB-14	
MW-25	3/30/18	1400	TB-14	
MW-25A	3/30/18	1440	TB-14	
MW-24	4/2/18	1125	TB-15	
MW-24A	4/2/18	1210	TB-15	
MW-23	4/2/18	1415	TB-15	
MW-23A	4/2/18	1525	TB-15	
MW-3	4/2/18	1640	TB-15	
MW-30	4/3/18	1015	TB-15 & FD-17	
MW-30A	4/3/18	1110	TB-15	
MW-31	4/3/18	1310	TB-15	
MW-12 (prod)	4/3/18	1430	FD-18	
MW-14 (prod)	4/3/18	1500		
MW-32	4/4/18	1200	TB-15	
MW-31A	4/4/18	1330	TB-15	

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/29/18

WELL / SAMPLE NUMBER: MW-2 | ACTIVITY TIME: Start / End | TIME: 1015

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 13.71 ft (toc) | FINAL DTW: 18.36 ft (toc)

SCREENED INTERVAL: 18.3-28.0 ft (bgs) | DEPTH OF INTAKE: 23.3 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~2.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
926	14.55	0.2	13.26	0.480	8.02	12.8	DNM	247.0	empty flow through cell
933	16.38	0.2	13.24	0.330	7.75	4.60	out of range	222.4	
941	17.61	0.1	13.32	0.329	7.82	2.40	794	213.0	empty cell
949	17.75	0.1	13.50	0.328	7.91	4.60	633	198.8	
954	17.90	0.1	13.73	0.325	7.88	2.77	489	192.3	
1000	18.15	0.1	13.89	0.325	7.76	2.58	390	180.6	
1006	18.36	0.1	14.03	0.323	7.67	2.46	364	17.5	

ANALYSES: TCE via EPA 8260

NOTES: temperature increasing due to outside temperature/sun

SIGNATURE: Amanda Wright

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/29/18

WELL / SAMPLE NUMBER: MW-27 | ACTIVITY TIME: Start 1145 End 1215 | TIME: 1215

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 14.75 ft (toc) | FINAL DTW: 15.06 ft (toc)

SCREENED INTERVAL: 15.6 - 25.4 ft (bgs) | DEPTH OF INTAKE: 20.5 ft (toc)

PUMP TYPE: [X] Peristaltic [ ] Variable-speed submersible [ ] Bladder

AMOUNT PURGED: ~ 1.0 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
11:56	14.92	0.1	16.59	0.099	5.43	3.85	134	212.4	
12:00	14.96	0.1	16.44	0.106	5.41	2.48	195	216.9	
12:04	15.00	0.1	16.56	0.108	5.44	2.26	186	218.7	
12:08	15.02	0.1	16.60	0.112	5.48	2.27	172	219.3	
12:12	15.06	0.1	16.38	0.112	5.50	2.24	157	219.8	
12:14	15.06	0.1	16.40	0.112	5.49	2.36	125	220.2	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: [signature]

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/29/18

WELL / SAMPLE NUMBER: MW-26 | ACTIVITY TIME: Start End | TIME: 14:10

QC SAMPLES COLLECTED: MS/MSD | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 16.85 ft (toc) | FINAL DTW: 17.53 ft (toc)

SCREENED INTERVAL: 25.3-30.1 ft (bgs) | DEPTH OF INTAKE: 27.7 ft (toc)

PUMP TYPE: [X] Peristaltic [ ] Variable-speed submersible [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
13:46	17.25	0.1	18.09	0.146	5.86	6.22	17.7	284.4	
13:51	17.38	0.1	17.58	0.151	5.73	2.30	15.5	275.5	
13:55	17.36	0.1	17.67	0.153	5.74	2.19	10.6	277.0	
13:59	17.40	0.1	17.70	0.152	5.74	1.78	8.82	275.8	
14:03	17.48	0.1	17.79	0.151	5.73	1.40	9.80	274.0	
14:13	17.53	0.1	17.70	0.150	5.74	1.07	3.63	265.9	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Amanda Wright

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/29/18

WELL / SAMPLE NUMBER: MW-26A | ACTIVITY TIME: Start ____ End ____ | TIME: 1515

QC SAMPLES COLLECTED: FD-16 | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 20.01 ft (toc) | FINAL DTW: 20.41 ft (toc)

SCREENED INTERVAL: 37.7-42.5 ft (bgs) | DEPTH OF INTAKE: 40.1 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~2 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1442	20.48	0.1	16.94	0.105	5.88	2.23	9.73	-468.9	
1450	20.48	0.1	16.74	0.101	5.75	1.32	13.3	-354.5	
1454	20.47	0.1	16.71	0.099	5.69	1.37	8.52	-411.8	
1459	20.48	0.1	16.54	0.094	5.65	1.41	7.49	-357.5	
1505	20.46	0.1	16.69	0.090	5.58	1.42	6.14	-326.1	
1511	20.46	0.1	17.00	0.087	5.57	1.15	6.14	-270.0	
1515	20.46	0.1	17.00	.0084	5.59	0.97	4.04	-228.3	
1520	20.41	0.1	16.99	0.084	5.58	0.81	3.56	-339.7	

ANALYSES: TCE via EPA 8260

NOTES: ORP fluctuating; would not stabilize

SIGNATURE: Amanda Arritt

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/29/18

WELL / SAMPLE NUMBER: MW-29 | ACTIVITY TIME: Start End | TIME: 1640

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 15.68 ft (toc) | FINAL DTW: 15.97 ft (toc)

SCREENED INTERVAL: 15.9-25.7 ft (bgs) | DEPTH OF INTAKE: 20.6 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1607	15.81		16.68	0.317	6.12	9.74	8.65	161.1	
1611	15.85		16.54	0.317	6.08	4.16	13.0	137.5	
1616	15.92		16.16	0.319	6.10	2.33	7.71	118.6	
1620	15.96		16.24	0.319	6.10	1.66	7.02	110.5	
1626	15.97		16.33	0.319	6.11	1.63	6.78	92.0	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Amanda Wyatt

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/30/18

WELL / SAMPLE NUMBER: MW-29A | ACTIVITY TIME: Start 09:00 End 09:50 | TIME: 09:50

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 15.66 ft (toc) | FINAL DTW: 17.52 ft (toc)

SCREENED INTERVAL: 30.8 - 359 ft (bgs) | DEPTH OF INTAKE: 33.2 ft (toc)

PUMP TYPE: ☑ Peristaltic ☐ Variable-speed submersible ☐ Bladder

AMOUNT PURGED: ~2.0 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
09:13	16.37	0.1	13.98	0.137	5.38	4.09	20.2	264.3	
09:19	17.10	0.1	14.70	0.128	5.58	2.64	14.6	225.7	
09:24	17.25	0.1	14.65	0.125	5.60	2.47	9.71	208.6	
09:29	17.33	0.1	14.66	0.125	5.63	2.14	8.53	181.3	
09:34	17.44	0.1	14.66	0.123	5.65	1.82	6.77	130.2	
09:38	17.49	0.1	14.69	0.126	5.66	1.80	5.54	91.0	
09:44	17.50	0.1	14.66	0.123	5.67	1.73	4.69	40.9	
09:49	17.52	0.1	14.66	0.122	5.68	1.63	2.86	13.4	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/30/18

WELL / SAMPLE NUMBER: MW-28 | ACTIVITY TIME: Start ____ End ____ | TIME: 1130

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 17.11 ft (toc) | FINAL DTW: 17.65 ft (toc)

SCREENED INTERVAL: 25.6-30.4 ft (bgs) | DEPTH OF INTAKE: 28.0 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1100	17.46	0.1	16.18	0.517	6.03	4.97	27.4	110.7	
1105	17.55	0.1	16.37	0.548	6.00	1.77	20.9	99.6	
1110	17.61	0.1	16.42	0.556	6.01	1.59	21.2	91.6	
1118	17.65	0.1	16.25	0.573	5.99	1.27	6.98	81.0	
1122	17.65	0.1	16.36	0.573	5.98	1.27	10.9	78.8	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Megan Arvin

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/30/18

WELL / SAMPLE NUMBER: MW-28A | ACTIVITY TIME: Start 12:45 End | TIME: 1315

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 17.31 ft (toc) | FINAL DTW: 20.11 ft (toc)

SCREENED INTERVAL: 90.5 - 45.3 (bgs) | DEPTH OF INTAKE: 42.9 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~ 1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
12:49	18.240	0.3	15.70	0.140	6.03	2.01	45.7	105.6	
12:53	19.22	0.3	15.50	0.116	5.71	0.80	47.1	132.7	
12:59	19.45	0.2	15.49	0.112	5.70	0.68	36.2	147.5	slowed flow rate
13:05	20.20	0.1	15.50	0.110	5.71	0.71	29.4	151.0	
13:09	20.11	0.1	15.56	0.110	5.72	0.68	27.0	152.6	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/30/18

WELL / SAMPLE NUMBER: MW-25 | ACTIVITY TIME: Start / End | TIME: 1400

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 18.39 ft (toc) | FINAL DTW: 19.10 ft (toc)

SCREENED INTERVAL: 30.2-35.0 ft (bgs) | DEPTH OF INTAKE: 32.6 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: 1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1336	18.65	0.1	17.37	0.197	5.71	3.89	74.4	207.7	
1340	18.91	0.1	17.38	0.199	5.67	1.56	63.9	205.6	
1344	19.00	0.1	17.30	0.202	5.67	1.30	37.5	204.8	
1350	19.10	0.1	17.29	0.205	5.65	0.87	27.7	203.0	
1354	19.10	0.1	17.22	0.206	5.66	0.89	14.6	200.9	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 3/30/18

WELL / SAMPLE NUMBER: MW-25A | ACTIVITY TIME: Start ____ End ____ | TIME: 1440

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-14

WATER LEVEL / PUMP DATA

INITIAL DTW: 18.92 ft (toc) | FINAL DTW: 19.91 ft (toc)

SCREENED INTERVAL: 44.7-49.5 ft (bgs) | DEPTH OF INTAKE: 47.1 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1418	19.66	0.1	16.71	0.166	5.93	3.10	80.2	219.3	
1422	19.78	0.1	16.56	0.166	5.90	1.40	29.4	217.1	
1426	19.91	0.1	16.50	0.168	5.88	1.15	17.6	214.2	
1430	19.91	0.1	16.43	0.170	5.86	0.96	26.9	211.2	
1434	19.91	0.1	16.51	0.171	5.87	1.41	12.7	208.4	DO increased rapidly but then decreased
1438	19.91	0.1	16.70	0.171	5.87	1.04	11.2	209.0	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: [signature]

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/2/18

WELL / SAMPLE NUMBER: MW-24 | ACTIVITY TIME: Start ____ End ____ | TIME: 1125

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 19.79 ft (toc) | FINAL DTW: 20.68 ft (toc)

SCREENED INTERVAL: 20.4-30.2 ft (bgs) | DEPTH OF INTAKE: 25.3 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
~~1056~~ 20.09	20.09	0.1	18.92	0.374	6.23	9.53	13.8	31.1	
1100	20.42	0.1	18.83	0.375	6.18	4.02	10.3	22.9	
1104	20.37	0.1	18.85	0.374	6.20	2.89	8.33	9.5	
1108	20.43	0.1	18.95	0.370	6.21	2.39	6.70	7.1	
1113	DRY	0.1	18.94	0.365	6.20	1.93	9.95	11.3	
1118	20.63	0.1	18.97	0.360	6.20	1.48	12.3	14.4	
1122	20.68	0.1	18.94	0.359	6.20	1.27	13.3	17.8	

SPA 4/2/18

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Aman Avitt

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/2/18

WELL / SAMPLE NUMBER: MW-24A | ACTIVITY TIME: Start ____ End ____ | TIME: 1210

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 20.11 ft (toc) | FINAL DTW: 22.71 ft (toc)

SCREENED INTERVAL: 50.1 - 59.9 ft (bgs) | DEPTH OF INTAKE: 52.5 ft (toc)

PUMP TYPE: [X] Peristaltic [ ] Variable-speed submersible [ ] Bladder

AMOUNT PURGED: ~ 1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1143	20.88	~~0.1~~ 0.07 SEA 4/2/18	18.22	0.081	5.74	6.03	8.07	100.8	
1148	21.52	0.1	17.95	0.077	5.50	1.16	12.3	126.3	
1153	21.96	0.1	17.98	0.073	5.44	0.75	8.32	132.5	
1157	22.26	0.1	17.94	0.073	5.44	~~2.22~~ 2.85	5.62	133.6	
1202	22.55	0.1	17.78	0.073	5.40	0.63	4.91	136.4	
1207	22.71	0.1	17.78	0.074	5.40	0.60	3.75	139.1	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Anna Avrett

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/2/18

WELL / SAMPLE NUMBER: MW-23 | ACTIVITY TIME: Start ____ End ____ | TIME: 1415

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 22.41 ft (toc) | FINAL DTW: 22.76 ft (toc)

SCREENED INTERVAL: 29.8-34.6 (bgs) | DEPTH OF INTAKE: 32.2 ft (toc)

PUMP TYPE: [X] Peristaltic [ ] Variable-speed submersible [ ] Bladder

AMOUNT PURGED: ~2 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
13:39	22.71	0.1	18.96	0.081	5.28	7.29	21.4	79.2	
1343	22.75	0.1	18.16	0.078	5.14	6.34	22.4	61.5	
1347	22.77	0.1	17.93	0.078	5.10	4.53	14.1	64.0	
1352	22.75	0.1	18.06	0.076	5.09	2.94	11.1	66.0	
1358	22.75	0.1	17.80	0.075	5.05	1.73	DNM	60.5	
1402	22.75	0.1	17.75	0.076	5.05	1.40	12.5	53.7	
1406	22.75	0.1	17.85	0.076	5.06	1.25	23.4	46.0	
1412	22.75	0.1	19.02	0.076	5.08	1.34	30.6	32.6	
1416	22.76	0.1	17.99	0.074	5.08	1.42	24.6	29.0	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: [signature]

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/2/18

WELL / SAMPLE NUMBER: MW-23A | ACTIVITY TIME: Start ____ End ____ | TIME: 1525

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 21.99 ft (toc) | FINAL DTW: 22.31 ft (toc)

SCREENED INTERVAL: 45.1-49.9 ft (bgs) | DEPTH OF INTAKE: 47.5 ft (toc)

PUMP TYPE

- [x] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1456	22.29	0.1	17.86	0.075	5.34	3.54	101	52.1	
1501	22.31	0.1	17.68	0.073	5.29	1.56	69.9	40.6	
1505	22.31	0.1	17.70	0.072	5.29	1.19	85.9	24.3	
1511	22.31	0.1	17.60	0.071	5.28	1.08	34.3	10.8	
1517	22.31	0.1	17.39	0.072	5.27	0.99	47.6	-0.6	
1521	22.31	0.1	17.42	0.072	5.28	1.03	25.3	-4.9	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: MacAvoy

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/2/18

WELL / SAMPLE NUMBER: MW-3 | ACTIVITY TIME: Start / End | TIME: 1640

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 19.70 ft (toc) | FINAL DTW: 20.43 ft (toc)

SCREENED INTERVAL: 26.1-35.8 ft (bgs) | DEPTH OF INTAKE: 31.0 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
16.02	20.25	0.1	15.05	0.148	5.84	11.71	10.3	132.8	
16:08	20.35	0.1	15.20	0.149	5.79	1.63	7.54	130.1	
16:17	20.41	0.1	15.16	0.150	5.84	1.15	5.49	121.3	
16:25	20.42	0.1	15.12	0.150	5.87	1.15	DNM	115.9	
16:29	20.45	0.1	15.14	0.149	5.87	1.12	5.43	112.7	
16.33	20.43	0.1	15.19	0.149	5.88	1.14	5.79	111.2	

ANALYSES: TCE via EPA 8260

NOTES: 0.05 ft of LNAPL

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/3/18

WELL / SAMPLE NUMBER: MW-30 | ACTIVITY TIME: Start ____ End ____ | TIME: 1015

QC SAMPLES COLLECTED: FD-17 | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 17.34 ft (toc) | FINAL DTW: 17.34 ft (toc)

SCREENED INTERVAL: SEA 4/5/18 FD 20.7 – 25.6 ft (bgs) | DEPTH OF INTAKE: 23.1 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
9:45	17.34	0.1	13.06	0.101	5.45	7.82	16.1	70.7	
9:52	17.34	0.1	13.24	0.103	5.36	6.03	17.0	34.6	
9:56	17.34	0.1	13.28	0.102	5.33	5.73	10.0	28.7	
10:00	17.34	0.1	13.29	0.100	5.30	5.18	7.64	24.7	
10:06	17.34	0.1	13.32	0.099	5.30	4.67	8.94	23.0	
10:10	17.34	0.1	13.37	0.099	5.29	4.16	5.01	22.0	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Brian Arritt

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/3/18

WELL / SAMPLE NUMBER: MW-30A | ACTIVITY TIME: Start ____ End ____ | TIME: 1110

QC SAMPLES COLLECTED: ____ | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 17.46 ft (toc) | FINAL DTW: 17.57 ft (toc)

SCREENED INTERVAL: 30.4 - 35.4 ft (bgs) | DEPTH OF INTAKE: 32.8 ft (toc)

PUMP TYPE:
- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: EPA 4/3/18 ~2 ~1105 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1042	17.55	0.1	13.68	0.084	5.57	10.81	DNm	26.6	
1046	17.55	0.1	13.69	0.084	5.50	3.77	27.4	23.9	
1050	17.57	0.2	13.74	0.084	5.45	3.16	9.71	24.1	
1056	17.57	0.2	13.95	0.080	5.41	2.99	9.95	20.2	
1102	17.57	0.2	14.10	0.079	5.39	2.95	7.65	18.2	
1106	17.57	0.2	14.01	0.080	5.35	~~3.98~~ 3.08	6.73	17.3	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Bryan Arritt

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville
DATE: 4/3/18
PROJECT NUMBER: 6252-16-2012.05
WEATHER CONDITIONS: sunny/windy 60's
MONITORING WELL: MW-31
ACTIVITY TIME: start: end:
QC SAMPLES: TB-15
BOTTLE TIME: 13:10

WATER LEVEL / WELL DATA

							Y / N
MEASURED WELL DEPTH	35.5 ft (~~TOC~~ bgs)	CASING STICKUP	-0.15 ft	WELL DIAMETER	2 in	NON-POTALBLE LABEL:	N/A
DEPTH TO WATER	32.19 ft (TOC)	SCREEN INTERVAL	30.4-35.2 ft bgs	WELL MATERIAL	SS	WELL ID PLATE:	N/A
						LOCKING CAP:	N/A

HEIGHT OF WATER COLUMN: 3.3 ft x
- [ ] 0.06 gal/ft (1 in)
- [X] 0.16 gal/ft (2 in)
- [ ] 0.65 gal/ft (4 in)
- [ ] 1.5 gal/ft (6 in)

1 PURGE VOL: 0.5 gal | 3 PURGE VOL: 1.5 gal

TOTAL VOLUME PURGED: ~ 3.5 gal

WELL YIELD:
- [ ] HIGH
- [ ] MODERATE
- [X] LOW

PURGE DATA

PURGE VOLUME (gallons)	initial	0.5	2.5	3.5
TEMPERATURE (C°)	15.38	15.12	15.38	15.21
pH	5.29	5.18	5.49	5.39
TURBIDITY (NTU)	7.92	897	DNM	DNM
CONDUCTIVITY (mS/cm)	0.051	0.352	0.909	0.421
DISSOLVED OXYGEN (mg/L)	4.91	8.22↓*	14.10↓	7.01
REDOX POTENTIAL (mV)	86.8	41.4	48.8	37.6

SAMPLE OBSERVATIONS:
- [ ] CLEAR
- [ ] COLORED
- [ ] CLOUDY
- [X] TURBID
- [ ] ODOR
- [ ] OTHER (see notes)

ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME COLLECTED	SAMPLE ID
[X] VOC (site-specific)	8260C	HCl, Ice	3-40 mL	MW-31

NOTES

DNM - did not measure - too turbid for instrument

*DO stabilized at 3.88 mg/L
- let recharge after 2.5 gal purged and well almost dry

SIGNATURE: Amanda Avriett

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT: CTS of Asheville, Inc. Superfund Site | JOB NUMBER: 6252-16-2012.05 | DATE: 4/4/18

WELL / SAMPLE NUMBER: MW-31A | ACTIVITY TIME: Start End | TIME: 1330

QC SAMPLES COLLECTED: | ASSOCIATED TRIP BLANK: TB-15

WATER LEVEL / PUMP DATA

INITIAL DTW: 25.37 ft (toc) | FINAL DTW: 26.55 ft (toc)

SCREENED INTERVAL: 49.3-54 ft (bgs) | DEPTH OF INTAKE: ~~32.8~~ SEA 4/4/18 51.7 ft (toc)

PUMP TYPE

- [X] Peristaltic
- [ ] Variable-speed submersible
- [ ] Bladder

AMOUNT PURGED: ~1.5 gal.

PURGE DATA

TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
1300	25.90	0.1	12.54	0.088	5.43	27.13↓	37.9	4.6↓	
1306	26.21	0.1	12.99	0.086	5.38	7.22	32.0	-11.3	
1310	26.39	0.1	13.23	0.086	5.34	5.62	DNM	-13.1	
1314	26.52	0.1	13.39	0.086	5.32	4.41	13.0	-13.7	
1318	26.55	0.1	13.33	0.085	5.28	3.84	DNM	-13.9	
1322	26.55	0.1	13.35	0.086	5.27	3.52	5.94	-12.3	

ANALYSES: TCE via EPA 8260

NOTES:

SIGNATURE: Mamhoff

FIELD DATA RECORD - GROUNDWATER SAMPLING

PROJECT	CTS of Asheville	**DATE**	4/4/18
PROJECT NUMBER	6252-16-2012.05	**WEATHER CONDITIONS**	clear 60s F
MONITORING WELL	MW-32	**ACTIVITY TIME**	start: end:
QC SAMPLES	TB-15	**BOTTLE TIME**	12:00

WATER LEVEL / WELL DATA

							Y / N
MEASURED WELL DEPTH	37.51 ft (~~TOC~~ bgs)	CASING STICKUP	+2.97 ft	WELL DIAMETER	2 in	NON-POTALBLE LABEL:	N/A
DEPTH TO WATER	30.40 ft (TOC)	SCREEN INTERVAL	27.4-37.2 ft bgs	WELL MATERIAL	SS	WELL ID PLATE:	N/A
						LOCKING CAP:	N/A

HEIGHT OF WATER COLUMN: 10.08 ft x
- ☐ 0.06 gal/ft (1 in)
- ☒ 0.16 gal/ft (2 in)
- ☐ 0.65 gal/ft (4 in)
- ☐ 1.5 gal/ft (6 in)

1 PURGE VOL: 1.6 gal | 3 PURGE VOL: 4.8 gal

TOTAL VOLUME PURGED: ~8 gal

WELL YIELD:
- ☐ HIGH
- ☒ MODERATE
- ☐ LOW

PURGE DATA

PURGE VOLUME (gallons)	initial	2.5	5.0	7.5
TEMPERATURE (C°)	13.23	13.21	13.19	13.20
pH	5.21	5.30	5.31	5.33
TURBIDITY (NTU)	171	DNM	DNM	DNM
CONDUCTIVITY (mS/cm)	0.085	0.086	0.085	0.085
DISSOLVED OXYGEN (mg/L)	4.09	DNM	1.67	DNM
REDOX POTENTIAL (mV)	171	17.5	16.6	15.5

SAMPLE OBSERVATIONS:
- ☐ CLEAR
- ☐ COLORED
- ☐ CLOUDY
- ☒ TURBID
- ☐ ODOR
- ☐ OTHER (see notes)

ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME COLLECTED	SAMPLE ID
☐ VOC (site-specific)	8260C	HCl, Ice	3-40 mL	MW-32

NOTES

- DNM - did not measure - turbidity out of range for instrument

SIGNATURE: [signature]

ATTACHMENT 5

GROUNDWATER AND LNAPL ANALYTICAL REPORT

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 06, 2018

Susan Avritt
Amec Foster Wheeler
1308 Patton Avenue
Asheville, NC 28806

RE: Project: CTS of Asheville
Pace Project No.: 92379074

Dear Susan Avritt:
Enclosed are the analytical results for sample(s) received by the laboratory on March 30, 2018. 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,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: CTS of Asheville
Pace Project No.: 92379074

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: CTS of Asheville
Pace Project No.: 92379074

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92379074001	**TB-14**	Water	03/29/18 00:00	03/30/18 15:27
92379074002	**FD-16**	Water	03/29/18 00:00	03/30/18 15:27
92379074003	**MW-2**	Water	03/29/18 10:15	03/30/18 15:27
92379074004	**MW-27**	Water	03/29/18 12:15	03/30/18 15:27
92379074005	**MW-26**	Water	03/29/18 14:10	03/30/18 15:27
92379074006	**MW-26A**	Water	03/29/18 15:15	03/30/18 15:27
92379074007	**MW-29**	Water	03/29/18 16:40	03/30/18 15:27
92379074008	**MW-29A**	Water	03/30/18 09:50	03/30/18 15:27
92379074009	**MW-28**	Water	03/30/18 11:30	03/30/18 15:27
92379074010	**MW-28A**	Water	03/30/18 13:15	03/30/18 15:27
92379074011	**MW-25**	Water	03/30/18 14:00	03/30/18 15:27
92379074012	**MW-25A**	Water	03/30/18 14:40	03/30/18 15:27

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: CTS of Asheville
Pace Project No.: 92379074

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92379074001	**TB-14**	EPA 8260	GAW	4	PASI-C
92379074002	**FD-16**	EPA 8260	GAW	4	PASI-C
92379074003	**MW-2**	EPA 8260	GAW	4	PASI-C
92379074004	**MW-27**	EPA 8260	GAW	4	PASI-C
92379074005	**MW-26**	EPA 8260	GAW	4	PASI-C
92379074006	**MW-26A**	EPA 8260	GAW	4	PASI-C
92379074007	**MW-29**	EPA 8260	GAW	4	PASI-C
92379074008	**MW-29A**	EPA 8260	GAW	4	PASI-C
92379074009	**MW-28**	EPA 8260	GAW	4	PASI-C
92379074010	**MW-28A**	EPA 8260	GAW	4	PASI-C
92379074011	**MW-25**	EPA 8260	GAW	4	PASI-C
92379074012	**MW-25A**	EPA 8260	GAW	4	PASI-C

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SUMMARY OF DETECTION

Project: CTS of Asheville
Pace Project No.: 92379074

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92379074002	**FD-16**					
EPA 8260	Trichloroethene	8040	ug/L	50.0	04/03/18 01:31	
92379074003	**MW-2**					
EPA 8260	Trichloroethene	3140	ug/L	25.0	04/05/18 12:38	
92379074004	**MW-27**					
EPA 8260	Trichloroethene	9620	ug/L	50.0	04/03/18 02:05	
92379074005	**MW-26**					
EPA 8260	Trichloroethene	28800	ug/L	200	04/05/18 02:09	
92379074006	**MW-26A**					
EPA 8260	Trichloroethene	7420	ug/L	50.0	04/05/18 14:01	
92379074007	**MW-29**					
EPA 8260	Trichloroethene	1950	ug/L	12.5	04/04/18 04:31	
92379074008	**MW-29A**					
EPA 8260	Trichloroethene	40400	ug/L	400	04/05/18 02:25	
92379074009	**MW-28**					
EPA 8260	Trichloroethene	1940	ug/L	12.5	04/04/18 04:48	
92379074010	**MW-28A**					
EPA 8260	Trichloroethene	51300	ug/L	400	04/05/18 02:41	
92379074011	**MW-25**					
EPA 8260	Trichloroethene	12000	ug/L	100	04/05/18 02:57	
92379074012	**MW-25A**					
EPA 8260	Trichloroethene	24900	ug/L	250	04/05/18 03:13	

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PROJECT NARRATIVE

Project: CTS of Asheville
Pace Project No.: 92379074

Method: **EPA 8260**
Description: 8260 MSV Low Level
Client: Amec Foster Wheeler, Asheville
Date: April 06, 2018

General Information:
12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: TB-14 **Lab ID: 92379074001** Collected: 03/29/18 00:00 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	ND	ug/L	1.0	0.47	1		04/03/18 02:43	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		04/03/18 02:43	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		1		04/03/18 02:43	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		04/03/18 02:43	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: FD-16 **Lab ID: 92379074002** Collected: 03/29/18 00:00 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**8040**	ug/L	50.0	23.5	50		04/03/18 01:31	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		50		04/03/18 01:31	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-130		50		04/03/18 01:31	17060-07-0	
Toluene-d8 (S)	111	%	70-130		50		04/03/18 01:31	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-2 **Lab ID: 92379074003** Collected: 03/29/18 10:15 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**3140**	ug/L	25.0	11.8	25		04/05/18 12:38	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	106	%	70-130		25		04/05/18 12:38	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-130		25		04/05/18 12:38	17060-07-0	
Toluene-d8 (S)	121	%	70-130		25		04/05/18 12:38	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-27 **Lab ID: 92379074004** Collected: 03/29/18 12:15 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**9620**	ug/L	50.0	23.5	50		04/03/18 02:05	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		50		04/03/18 02:05	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		50		04/03/18 02:05	17060-07-0	
Toluene-d8 (S)	109	%	70-130		50		04/03/18 02:05	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-26 **Lab ID: 92379074005** Collected: 03/29/18 14:10 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**28800**	ug/L	200	94.0	200		04/05/18 02:09	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		200		04/05/18 02:09	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		200		04/05/18 02:09	17060-07-0	
Toluene-d8 (S)	101	%	70-130		200		04/05/18 02:09	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-26A **Lab ID: 92379074006** Collected: 03/29/18 15:15 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**7420**	ug/L	50.0	23.5	50		04/05/18 14:01	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		50		04/05/18 14:01	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%	70-130		50		04/05/18 14:01	17060-07-0	
Toluene-d8 (S)	122	%	70-130		50		04/05/18 14:01	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-29 **Lab ID: 92379074007** Collected: 03/29/18 16:40 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**1950**	ug/L	12.5	5.9	12.5		04/04/18 04:31	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		12.5		04/04/18 04:31	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	70-130		12.5		04/04/18 04:31	17060-07-0	
Toluene-d8 (S)	107	%	70-130		12.5		04/04/18 04:31	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-29A **Lab ID: 92379074008** Collected: 03/30/18 09:50 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**40400**	ug/L	400	188	400		04/05/18 02:25	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		400		04/05/18 02:25	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		400		04/05/18 02:25	17060-07-0	
Toluene-d8 (S)	99	%	70-130		400		04/05/18 02:25	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-28 **Lab ID: 92379074009** Collected: 03/30/18 11:30 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**1940**	ug/L	12.5	5.9	12.5		04/04/18 04:48	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		12.5		04/04/18 04:48	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130		12.5		04/04/18 04:48	17060-07-0	
Toluene-d8 (S)	111	%	70-130		12.5		04/04/18 04:48	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-28A **Lab ID: 92379074010** Collected: 03/30/18 13:15 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**51300**	ug/L	400	188	400		04/05/18 02:41	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		400		04/05/18 02:41	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		400		04/05/18 02:41	17060-07-0	
Toluene-d8 (S)	102	%	70-130		400		04/05/18 02:41	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-25 **Lab ID: 92379074011** Collected: 03/30/18 14:00 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**12000**	ug/L	100	47.0	100		04/05/18 02:57	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		100		04/05/18 02:57	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		100		04/05/18 02:57	17060-07-0	
Toluene-d8 (S)	100	%	70-130		100		04/05/18 02:57	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379074

Sample: MW-25A **Lab ID: 92379074012** Collected: 03/30/18 14:40 Received: 03/30/18 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**24900**	ug/L	250	118	250		04/05/18 03:13	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		250		04/05/18 03:13	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		250		04/05/18 03:13	17060-07-0	
Toluene-d8 (S)	99	%	70-130		250		04/05/18 03:13	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379074

QC Batch: 404535 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379074001

METHOD BLANK: 2244248 Matrix: Water
Associated Lab Samples: 92379074001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/02/18 21:05	
1,2-Dichloroethane-d4 (S)	%	101	70-130		04/02/18 21:05	
4-Bromofluorobenzene (S)	%	98	70-130		04/02/18 21:05	
Toluene-d8 (S)	%	101	70-130		04/02/18 21:05	

LABORATORY CONTROL SAMPLE: 2244249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	52.6	105	78-122	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2244250 2244251

Parameter	Units	92378674025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	ND	20	20	23.0	23.8	115	119	69-151	4	30	
1,2-Dichloroethane-d4 (S)	%						98	97	70-130			
4-Bromofluorobenzene (S)	%						99	99	70-130			
Toluene-d8 (S)	%						101	102	70-130			

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379074

QC Batch: 404539 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379074002, 92379074004

METHOD BLANK: 2244265 Matrix: Water
Associated Lab Samples: 92379074002, 92379074004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/02/18 21:02	
1,2-Dichloroethane-d4 (S)	%	80	70-130		04/02/18 21:02	
4-Bromofluorobenzene (S)	%	104	70-130		04/02/18 21:02	
Toluene-d8 (S)	%	116	70-130		04/02/18 21:02	

LABORATORY CONTROL SAMPLE: 2244266

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	53.3	107	78-122	
1,2-Dichloroethane-d4 (S)	%			87	70-130	
4-Bromofluorobenzene (S)	%			95	70-130	
Toluene-d8 (S)	%			86	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2244267 2244268

Parameter	Units	92378674032 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	21.5	20	20	45.6	47.0	121	128	69-151	3	30	
1,2-Dichloroethane-d4 (S)	%						96	93	70-130			
4-Bromofluorobenzene (S)	%						94	95	70-130			
Toluene-d8 (S)	%						91	91	70-130			

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379074

QC Batch: 404713 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379074007, 92379074009

METHOD BLANK: 2245131 Matrix: Water
Associated Lab Samples: 92379074007, 92379074009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/03/18 22:36	
1,2-Dichloroethane-d4 (S)	%	82	70-130		04/03/18 22:36	
4-Bromofluorobenzene (S)	%	98	70-130		04/03/18 22:36	
Toluene-d8 (S)	%	109	70-130		04/03/18 22:36	

LABORATORY CONTROL SAMPLE: 2245132

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	50.6	101	78-122	
1,2-Dichloroethane-d4 (S)	%			84	70-130	
4-Bromofluorobenzene (S)	%			92	70-130	
Toluene-d8 (S)	%			85	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2245133 2245134

Parameter	Units	92378583003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	ND	20	20	22.2	21.7	111	109	69-151	2	30	
1,2-Dichloroethane-d4 (S)	%						81	86	70-130			
4-Bromofluorobenzene (S)	%						97	97	70-130			
Toluene-d8 (S)	%						92	90	70-130			

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379074

QC Batch: 404910 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379074005, 92379074008, 92379074010, 92379074011, 92379074012

METHOD BLANK: 2246286 Matrix: Water
Associated Lab Samples: 92379074005, 92379074008, 92379074010, 92379074011, 92379074012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/04/18 18:06	
1,2-Dichloroethane-d4 (S)	%	99	70-130		04/04/18 18:06	
4-Bromofluorobenzene (S)	%	99	70-130		04/04/18 18:06	
Toluene-d8 (S)	%	101	70-130		04/04/18 18:06	

LABORATORY CONTROL SAMPLE: 2246287

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	53.3	107	78-122	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2246288 2246289

Parameter	Units	92379074005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	28800	4000	4000	32800	34100	101	134	69-151	4	30	
1,2-Dichloroethane-d4 (S)	%						97	97	70-130			
4-Bromofluorobenzene (S)	%						100	99	70-130			
Toluene-d8 (S)	%						99	99	70-130			

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379074

QC Batch: 404984 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379074003, 92379074006

METHOD BLANK: 2246560 Matrix: Water
Associated Lab Samples: 92379074003, 92379074006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/05/18 06:33	
1,2-Dichloroethane-d4 (S)	%	94	70-130		04/05/18 06:33	
4-Bromofluorobenzene (S)	%	102	70-130		04/05/18 06:33	
Toluene-d8 (S)	%	109	70-130		04/05/18 06:33	

LABORATORY CONTROL SAMPLE: 2246561

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	51.6	103	78-122	
1,2-Dichloroethane-d4 (S)	%			89	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			91	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2246562 2246563

Parameter	Units	92378674031 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	ND	8000	8000	9010	8510	113	106	69-151	6	30	
1,2-Dichloroethane-d4 (S)	%						97	92	70-130			
4-Bromofluorobenzene (S)	%						95	101	70-130			
Toluene-d8 (S)	%						93	94	70-130			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2246971 2246972

Parameter	Units	92379678002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	ND	20	20	22.0	22.2	110	111	69-151	1	30	
1,2-Dichloroethane-d4 (S)	%						103	96	70-130			
4-Bromofluorobenzene (S)	%						102	100	70-130			
Toluene-d8 (S)	%						98	101	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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: CTS of Asheville
Pace Project No.: 92379074

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 adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-C Pace Analytical Services - Charlotte

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CTS of Asheville
Pace Project No.: 92379074

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92379074001	**TB-14**	EPA 8260	404535		
92379074002	**FD-16**	EPA 8260	404539		
92379074003	**MW-2**	EPA 8260	404984		
92379074004	**MW-27**	EPA 8260	404539		
92379074005	**MW-26**	EPA 8260	404910		
92379074006	**MW-26A**	EPA 8260	404984		
92379074007	**MW-29**	EPA 8260	404713		
92379074008	**MW-29A**	EPA 8260	404910		
92379074009	**MW-28**	EPA 8260	404713		
92379074010	**MW-28A**	EPA 8260	404910		
92379074011	**MW-25**	EPA 8260	404910		
92379074012	**MW-25A**	EPA 8260	404910		

Pace Analytical	Document Name: **Sample Condition Upon Receipt(SCUR)**	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: **F-CAR-CS-033-Rev.06**	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Amec Foster

Project WO# : 92379074

92379074

Courier: ☐ Commercial ☐ Fed Ex ☐ Pace ☐ UPS ☐ USPS ☐ Other:____ ☑ Client

Custody Seal Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Date/Initials Person Examining Contents: 3/30/18 AL

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: T027 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 5.5 **Correction Factor:** Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 5.5

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil ☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

COMMENTS/SAMPLE DISCREPANCY **Field Data Required?** ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: JE Date: 4/4

Project Manager SRF Review: JE Date: 4/4

Pace Analytical®	Document Name: **Sample Condition Upon Receipt(SCUR)**	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: **F-CAR-CS-033-Rev.06**	Issuing Authority: Pace Carolinas Quality Office

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # **WO#: 92379074**

PM: PTE Due Date: 04/06/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	\				\	\	\	\			\		\	\	\	2									\	\		
2	\				\	\	\	\			\		\	\	\	3									\	\		
3	\				\	\	\	\			\		\	\	\	3									\	\		
4	\				\	\	\	\			\		\	\	\	3									\	\		
5	\				\	\	\	\			\		\	\	\	9									\	\		
6	\				\	\	\	\			\		\	\	\	3									\	\		
7	\				\	\	\	\			\		\	\	\	3									\	\		
8	\				\	\	\	\			\		\	\	\	3									\	\		
9	\				\	\	\	\			\		\	\	\	3									\	\		
10	\				\	\	\	\			\		\	\	\	3									\	\		
11	\				\	\	\	\			\		\	\	\	3									\	\		
12	\				\	\	\	\			\		\	\	\	3									\	\		

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Amec Foster Wheeler, Asheville	Report To: Susan Avritt	Attention:
Address: 1308 Patton Avenue	Copy To:	Company Name:
Asheville, NC 28806		Address:
Email: susan.avritt@amecfw.com	Purchase Order #:	Pace Quote:
Phone: NONE Fax	Project Name: CTS of Asheville	Pace Project Manager: taylor.ezell@pacelabs.com,
Requested Due Date:	Project #:	Pace Profile #: 3900-1

Regulatory Agency

State / Location: NC

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TCE by 8260	~~TCE by 8260~~	Large Coolers	~~Trip BLANK~~	Residual Chlorine (Y/N)	92379074
1	TB-14	WT	G			lab prep			2				2					X	X					001
2	FD-16	WT	G			3/29/18	00:00		3				3					X	X					002
3	MW-2	WT	G			3/29/18	10:15		3				3					X	X					003
4	MW-27	WT	G			3/29/18	12:15		3				3					X	X					004
5	MW-26	WT	G			3/29/18	14:10		9				9					X	X					MS/MSD 005
6	MW-26A	WT	G			3/29/18	15:15		3				3					X	X					006
7	MW-29	WT	G			3/29/18	16:40		3				3					X	X					007
8	MW-29A	WT	G			3/30/18	9:50		3				3					X	X					008
9	MW-28	WT	G			3/30/18	11:30		3				3					X	X					009
10	MW-28A	WT	G			3/30/18	12:15		3				3					X	X					010
11	MW-25	WT	G			3/30/18	14:00		3				3					X	X					011
12	MW-25A	WT	G			3/30/18	14:40		3				3					X	X					012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Level 4 Data Package	Susan Avritt, AMEC	3/31/18	1527		3/31/18	15:27	5.5	Y	~~A~~ Y	Y

AW 3/30/18

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	
SIGNATURE of SAMPLER:	DATE Signed:

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 13, 2018

Susan Avritt
Amec Foster Wheeler
1308 Patton Avenue
Asheville, NC 28806

RE: Project: CTS of Asheville
Pace Project No.: 92379548

Dear Susan Avritt:
Enclosed are the analytical results for sample(s) received by the laboratory on April 04, 2018. 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,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: CTS of Asheville
Pace Project No.: 92379548

Atlanta Certification IDs

110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Texas Certification #: T104704397-08-TX
Virginia Certification #: 460204

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: CTS of Asheville
Pace Project No.: 92379548

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92379548002	**FD-17**	Water	04/03/18 00:00	04/04/18 13:55
92379548003	**MW-24**	Water	04/02/18 11:25	04/04/18 13:55
92379548004	**MW-24A**	Water	04/02/18 12:10	04/04/18 13:55
92379548005	**MW-23**	Water	04/02/18 14:15	04/04/18 13:55
92379548006	**MW-23A**	Water	04/02/18 15:25	04/04/18 13:55
92379548007	**MW-3**	Water	04/02/18 16:40	04/04/18 13:55
92379548008	**MW-30**	Water	04/03/18 10:15	04/04/18 13:55
92379548009	**MW-30A**	Water	04/03/18 11:10	04/04/18 13:55
92379548010	**MW-31**	Water	04/03/18 13:10	04/04/18 13:55
92379548011	**MW-32**	Water	04/04/18 12:00	04/04/18 13:55
92379548012	**MW-31A**	Water	04/04/18 13:30	04/04/18 13:55
92379548013	**FD-18**	Water	04/03/18 00:00	04/04/18 13:55
92379548014	**MW-12(prod)**	Water	04/03/18 14:30	04/04/18 13:55
92379548015	**MW-14(prod)**	Water	04/03/18 15:00	04/04/18 13:55

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: CTS of Asheville
Pace Project No.: 92379548

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92379548002	**FD-17**	EPA 8260	GAW	4	PASI-C
92379548003	**MW-24**	EPA 8260	GAW	4	PASI-C
92379548004	**MW-24A**	EPA 8260	GAW	4	PASI-C
92379548005	**MW-23**	EPA 8260	GAW	4	PASI-C
92379548006	**MW-23A**	EPA 8260	GAW	4	PASI-C
92379548007	**MW-3**	EPA 8260	GAW	4	PASI-C
92379548008	**MW-30**	EPA 8260	GAW	4	PASI-C
92379548009	**MW-30A**	EPA 8260	GAW	4	PASI-C
92379548010	**MW-31**	EPA 8260	GAW	4	PASI-C
92379548011	**MW-32**	EPA 8260	GAW	4	PASI-C
92379548012	**MW-31A**	EPA 8260	GAW	4	PASI-C
92379548013	**FD-18**	EPA 8260B	JHG	5	PASI-GA
		Pace SOP #204	JPT	1	PASI-GA
92379548014	**MW-12(prod)**	EPA 8260B	JHG	5	PASI-GA
		Pace SOP #204	JPT	1	PASI-GA
92379548015	**MW-14(prod)**	EPA 8260B	JHG	5	PASI-GA
		Pace SOP #204	JPT	1	PASI-GA

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SUMMARY OF DETECTION

Project: CTS of Asheville
Pace Project No.: 92379548

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92379548002	**FD-17**					
EPA 8260	Trichloroethene	6390	ug/L	50.0	04/05/18 21:30	
92379548003	**MW-24**					
EPA 8260	Trichloroethene	8130	ug/L	50.0	04/05/18 21:46	
92379548004	**MW-24A**					
EPA 8260	Trichloroethene	44900	ug/L	500	04/06/18 12:03	M1
92379548005	**MW-23**					
EPA 8260	Trichloroethene	13900	ug/L	100	04/06/18 12:20	
92379548006	**MW-23A**					
EPA 8260	Trichloroethene	21700	ug/L	200	04/06/18 12:37	
92379548007	**MW-3**					
EPA 8260	Trichloroethene	15000	ug/L	100	04/06/18 12:53	
92379548008	**MW-30**					
EPA 8260	Trichloroethene	6410	ug/L	50.0	04/05/18 23:07	
92379548009	**MW-30A**					
EPA 8260	Trichloroethene	26600	ug/L	250	04/06/18 14:35	
92379548010	**MW-31**					
EPA 8260	Trichloroethene	772	ug/L	10.0	04/06/18 14:52	
92379548011	**MW-32**					
EPA 8260	Trichloroethene	2590	ug/L	25.0	04/06/18 15:08	
92379548012	**MW-31A**					
EPA 8260	Trichloroethene	8690	ug/L	50.0	04/06/18 00:11	
92379548013	**FD-18**					
EPA 8260B	Trichloroethene	5650000	ug/kg	665000	04/10/18 15:03	M1
Pace SOP #204	Percent Moisture	25.7	%	0.10	04/12/18 10:08	
92379548014	**MW-12(prod)**					
EPA 8260B	Trichloroethene	6270000	ug/kg	768000	04/10/18 15:33	
Pace SOP #204	Percent Moisture	35.4	%	0.10	04/12/18 10:10	
92379548015	**MW-14(prod)**					
EPA 8260B	Trichloroethene	10200000	ug/kg	750000	04/10/18 16:03	
Pace SOP #204	Percent Moisture	33.6	%	0.10	04/12/18 10:13	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of Asheville
Pace Project No.: 92379548

Method: **EPA 8260**
Description: 8260 MSV Low Level
Client: Amec Foster Wheeler, Asheville
Date: April 13, 2018

General Information:
11 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 405234

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92379548004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2248078)
  - Trichloroethene
- MSD (Lab ID: 2248079)
  - Trichloroethene

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: CTS of Asheville
Pace Project No.: 92379548

Method: **EPA 8260B**
Description: 8260 MSV 5035
Client: Amec Foster Wheeler, Asheville
Date: April 13, 2018

General Information:
3 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5035 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 4070

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92379548013

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 20342)
  - Trichloroethene
- MSD (Lab ID: 20343)
  - Trichloroethene

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: FD-17 **Lab ID: 92379548002** Collected: 04/03/18 00:00 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**6390**	ug/L	50.0	23.5	50		04/05/18 21:30	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		50		04/05/18 21:30	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		50		04/05/18 21:30	17060-07-0	
Toluene-d8 (S)	101	%	70-130		50		04/05/18 21:30	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-24 **Lab ID: 92379548003** Collected: 04/02/18 11:25 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**8130**	ug/L	50.0	23.5	50		04/05/18 21:46	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		50		04/05/18 21:46	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		50		04/05/18 21:46	17060-07-0	
Toluene-d8 (S)	101	%	70-130		50		04/05/18 21:46	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-24A **Lab ID: 92379548004** Collected: 04/02/18 12:10 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**44900**	ug/L	500	235	500		04/06/18 12:03	79-01-6	M1
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		500		04/06/18 12:03	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%	70-130		500		04/06/18 12:03	17060-07-0	
Toluene-d8 (S)	121	%	70-130		500		04/06/18 12:03	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-23 **Lab ID: 92379548005** Collected: 04/02/18 14:15 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**13900**	ug/L	100	47.0	100		04/06/18 12:20	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	108	%	70-130		100		04/06/18 12:20	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-130		100		04/06/18 12:20	17060-07-0	
Toluene-d8 (S)	120	%	70-130		100		04/06/18 12:20	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-23A **Lab ID: 92379548006** Collected: 04/02/18 15:25 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**21700**	ug/L	200	94.0	200		04/06/18 12:37	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		200		04/06/18 12:37	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-130		200		04/06/18 12:37	17060-07-0	
Toluene-d8 (S)	114	%	70-130		200		04/06/18 12:37	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-3 **Lab ID: 92379548007** Collected: 04/02/18 16:40 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**15000**	ug/L	100	47.0	100		04/06/18 12:53	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		100		04/06/18 12:53	460-00-4	
1,2-Dichloroethane-d4 (S)	88	%	70-130		100		04/06/18 12:53	17060-07-0	
Toluene-d8 (S)	121	%	70-130		100		04/06/18 12:53	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-30 **Lab ID: 92379548008** Collected: 04/03/18 10:15 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**6410**	ug/L	50.0	23.5	50		04/05/18 23:07	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		50		04/05/18 23:07	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		50		04/05/18 23:07	17060-07-0	
Toluene-d8 (S)	101	%	70-130		50		04/05/18 23:07	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-30A **Lab ID: 92379548009** Collected: 04/03/18 11:10 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**26600**	ug/L	250	118	250		04/06/18 14:35	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		250		04/06/18 14:35	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130		250		04/06/18 14:35	17060-07-0	
Toluene-d8 (S)	112	%	70-130		250		04/06/18 14:35	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-31 **Lab ID: 92379548010** Collected: 04/03/18 13:10 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**772**	ug/L	10.0	4.7	10		04/06/18 14:52	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		10		04/06/18 14:52	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-130		10		04/06/18 14:52	17060-07-0	
Toluene-d8 (S)	117	%	70-130		10		04/06/18 14:52	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-32 **Lab ID: 92379548011** Collected: 04/04/18 12:00 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**2590**	ug/L	25.0	11.8	25		04/06/18 15:08	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	107	%	70-130		25		04/06/18 15:08	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130		25		04/06/18 15:08	17060-07-0	
Toluene-d8 (S)	122	%	70-130		25		04/06/18 15:08	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-31A **Lab ID: 92379548012** Collected: 04/04/18 13:30 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Trichloroethene	**8690**	ug/L	50.0	23.5	50		04/06/18 00:11	79-01-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		50		04/06/18 00:11	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		50		04/06/18 00:11	17060-07-0	
Toluene-d8 (S)	99	%	70-130		50		04/06/18 00:11	2037-26-5	

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: FD-18 **Lab ID: 92379548013** Collected: 04/03/18 00:00 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035	Analytical Method: EPA 8260B Preparation Method: EPA 5035								
Trichloroethene	**5650000**	ug/kg	665000	33200	10000	04/10/18 10:00	04/10/18 15:03	79-01-6	M1
Surrogates									
Dibromofluoromethane (S)	82	%.	73-114		10000	04/10/18 10:00	04/10/18 15:03	1868-53-7	
Toluene-d8 (S)	98	%.	85-109		10000	04/10/18 10:00	04/10/18 15:03	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	77-124		10000	04/10/18 10:00	04/10/18 15:03	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%.	69-133		10000	04/10/18 10:00	04/10/18 15:03	17060-07-0	
Percent Moisture	Analytical Method: Pace SOP #204								
Percent Moisture	**25.7**	%	0.10	0.10	1		04/12/18 10:08		

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-12(prod) **Lab ID: 92379548014** Collected: 04/03/18 14:30 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035	Analytical Method: EPA 8260B Preparation Method: EPA 5035								
Trichloroethene	**6270000**	ug/kg	768000	38400	10000	04/10/18 10:00	04/10/18 15:33	79-01-6	
Surrogates									
Dibromofluoromethane (S)	86	%.	73-114		10000	04/10/18 10:00	04/10/18 15:33	1868-53-7	
Toluene-d8 (S)	98	%.	85-109		10000	04/10/18 10:00	04/10/18 15:33	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	77-124		10000	04/10/18 10:00	04/10/18 15:33	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%.	69-133		10000	04/10/18 10:00	04/10/18 15:33	17060-07-0	
Percent Moisture	Analytical Method: Pace SOP #204								
Percent Moisture	**35.4**	%	0.10	0.10	1		04/12/18 10:10		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CTS of Asheville
Pace Project No.: 92379548

Sample: MW-14(prod) **Lab ID: 92379548015** Collected: 04/03/18 15:00 Received: 04/04/18 13:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035	Analytical Method: EPA 8260B Preparation Method: EPA 5035								
Trichloroethene	**10200000**	ug/kg	750000	37500	10000	04/10/18 10:00	04/10/18 16:03	79-01-6	
Surrogates									
Dibromofluoromethane (S)	89	%.	73-114		10000	04/10/18 10:00	04/10/18 16:03	1868-53-7	
Toluene-d8 (S)	98	%.	85-109		10000	04/10/18 10:00	04/10/18 16:03	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	77-124		10000	04/10/18 10:00	04/10/18 16:03	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%.	69-133		10000	04/10/18 10:00	04/10/18 16:03	17060-07-0	
Percent Moisture	Analytical Method: Pace SOP #204								
Percent Moisture	**33.6**	%	0.10	0.10	1		04/12/18 10:13		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379548

QC Batch: 405132 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379548002, 92379548003, 92379548008, 92379548012

METHOD BLANK: 2247573 Matrix: Water
Associated Lab Samples: 92379548002, 92379548003, 92379548008, 92379548012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/05/18 15:19	
1,2-Dichloroethane-d4 (S)	%	100	70-130		04/05/18 15:19	
4-Bromofluorobenzene (S)	%	99	70-130		04/05/18 15:19	
Toluene-d8 (S)	%	101	70-130		04/05/18 15:19	

LABORATORY CONTROL SAMPLE: 2247574

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	52.7	105	78-122	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2248065 2248066

Parameter	Units	92379548012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	8690	1000	1000	9650	9940	96	125	69-151	3	30	
1,2-Dichloroethane-d4 (S)	%						98	96	70-130			
4-Bromofluorobenzene (S)	%						101	101	70-130			
Toluene-d8 (S)	%						102	100	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379548

QC Batch: 405234 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92379548004, 92379548005, 92379548006, 92379548007, 92379548009, 92379548010, 92379548011

METHOD BLANK: 2248076 Matrix: Water
Associated Lab Samples: 92379548004, 92379548005, 92379548006, 92379548007, 92379548009, 92379548010, 92379548011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	0.47	04/06/18 10:39	
1,2-Dichloroethane-d4 (S)	%	79	70-130		04/06/18 10:39	
4-Bromofluorobenzene (S)	%	106	70-130		04/06/18 10:39	
Toluene-d8 (S)	%	122	70-130		04/06/18 10:39	

LABORATORY CONTROL SAMPLE: 2248077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	53.8	108	78-122	
1,2-Dichloroethane-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			93	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2248078 2248079

Parameter	Units	92379548004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/L	44900	10000	10000	66000	62200	211	173	69-151	6	30	M1
1,2-Dichloroethane-d4 (S)	%						99	102	70-130			
4-Bromofluorobenzene (S)	%						99	98	70-130			
Toluene-d8 (S)	%						101	99	70-130			

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379548

QC Batch: 4070 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035 Analysis Description: 8260 MSV 5035
Associated Lab Samples: 92379548013, 92379548014, 92379548015

METHOD BLANK: 20340 Matrix: Solid
Associated Lab Samples: 92379548013, 92379548014, 92379548015

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	5.0	0.25	04/10/18 11:14	
1,2-Dichloroethane-d4 (S)	%.	97	69-133		04/10/18 11:14	
4-Bromofluorobenzene (S)	%.	105	77-124		04/10/18 11:14	
Dibromofluoromethane (S)	%.	93	73-114		04/10/18 11:14	
Toluene-d8 (S)	%.	100	85-109		04/10/18 11:14	

LABORATORY CONTROL SAMPLE: 20341

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	50	51.7	103	65-152	
1,2-Dichloroethane-d4 (S)	%.			98	69-133	
4-Bromofluorobenzene (S)	%.			96	77-124	
Dibromofluoromethane (S)	%.			107	73-114	
Toluene-d8 (S)	%.			98	85-109	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 20342 20343

Parameter	Units	92379548013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Trichloroethene	ug/kg	5650000	3330000	3330000	12500000	11600000	206	179	16-172	7	30	M1
1,2-Dichloroethane-d4 (S)	%.						97	97	69-133			
4-Bromofluorobenzene (S)	%.						98	95	77-124			
Dibromofluoromethane (S)	%.						103	106	73-114			
Toluene-d8 (S)	%.						98	97	85-109			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CTS of Asheville
Pace Project No.: 92379548

QC Batch: 4225 Analysis Method: Pace SOP #204
QC Batch Method: Pace SOP #204 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92379548013, 92379548014, 92379548015

SAMPLE DUPLICATE: 21004

Parameter	Units	92379548013 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	25.7	27.5	7	10	

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QUALIFIERS

Project: CTS of Asheville
Pace Project No.: 92379548

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 adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-C	Pace Analytical Services - Charlotte
PASI-GA	Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CTS of Asheville
Pace Project No.: 92379548

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92379548002	**FD-17**	EPA 8260	405132		
92379548003	**MW-24**	EPA 8260	405132		
92379548004	**MW-24A**	EPA 8260	405234		
92379548005	**MW-23**	EPA 8260	405234		
92379548006	**MW-23A**	EPA 8260	405234		
92379548007	**MW-3**	EPA 8260	405234		
92379548008	**MW-30**	EPA 8260	405132		
92379548009	**MW-30A**	EPA 8260	405234		
92379548010	**MW-31**	EPA 8260	405234		
92379548011	**MW-32**	EPA 8260	405234		
92379548012	**MW-31A**	EPA 8260	405132		
92379548013	**FD-18**	EPA 5035	4070	EPA 8260B	4081
92379548014	**MW-12(prod)**	EPA 5035	4070	EPA 8260B	4081
92379548015	**MW-14(prod)**	EPA 5035	4070	EPA 8260B	4081
92379548013	**FD-18**	Pace SOP #204	4225		
92379548014	**MW-12(prod)**	Pace SOP #204	4225		
92379548015	**MW-14(prod)**	Pace SOP #204	4225		

REPORT OF LABORATORY ANALYSIS

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: AMec Foster

Project #

WO# : 92379548

92379548

Courier: ☐ Commercial ☑ Pace ☐ Fed Ex ☐ UPS ☐ USPS ☐ Other:____ ☐ Client

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

Date/Initials Person Examining Contents: RDT 4/4/18

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A

Thermometer: ☑ IR Gun ID: 7027 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 5.9 **Correction Factor:** Add/Subtract (°C) 0.0

Cooler Temp Corrected (°C): 5.9

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT / three product sampler				
Headspace in VOA Vials (>5-6mm)?	☑ Yes	☐ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: (K) **Date:** 4/9

Project Manager SRF Review: (K) **Date:** 4/9

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # **WO# : 92379548**

PM: PTE **Due Date: 04/11/18**

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																2												
2																3												
3																3												
4																3												
5																3												
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11																3												
12																3												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project #

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																		2											
2																		2											
3																		2											
4																													
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12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Amec Foster Wheeler, Asheville	Report To:	Susan Avritt	Attention:	
Address:	1308 Patton Avenue	Copy To:		Company Name:	
Asheville, NC 28806				Address:	
Email:	susan.avritt@amecfw.com	Purchase Order #:		Pace Quote:	
Phone:	NONE Fax	Project Name:	CTS of Asheville	Pace Project Manager:	taylor.ezell@pacelabs.com,
Requested Due Date:		Project #:		Pace Profile #:	3900-1

Regulatory Agency	
State / Location	NC

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: TCE by 8260	TCE by 8260	Large Coolers	Trip BLANK	Residual Chlorine (Y/N)	923795-48
1	TB-15	WT	G			lab	prep		2				2						X					001
2	FD-17	WT	G			4/3/18	00:00		3				3						X					002
3	MW-24	WT	G			4/2/18	1125		3				3						X					003
4	MW-24A	WT	G			4/2/18	1210		3				3						X					004
5	MW-23	WT	G			4/2/18	1415		3				3						X					005
6	MW-23A	WT	G			4/2/18	1525		3				3						X					006
7	MW-3	WT	G			4/2/18	1640		3				3						X					007
8	MW-30	WT	G			4/3/18	1015		3				3						X					008
9	MW-30A	WT	G			4/3/18	1110		3				3						X					009
10	MW-31	WT	G			4/3/18	1310		3				3						X					010
11	MW-32	WT	G			4/4/18	1200		3				3						X					011
12	MW-31A	WT	G			4/4/18	1330		3				3						X					012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Level 4 Data Package	SAvritt	4/4/18	1355	A. Trantham	4/4/18	13:55	5.9	Y	N	Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	
SIGNATURE of SAMPLER:	DATE Signed:

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A — Required Client Information:

Company:	Amec Foster Wheeler, Asheville
Address:	1308 Patton Avenue
	Asheville, NC 28806
Email:	susan.avritt@amecfw.com
Phone:	NONE Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Susan Avritt
Copy To:	
Purchase Order #:	
Project Name:	CTS of Asheville
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	taylor.ezell@pacelabs.com,
Pace Profile #:	3900-1

Regulatory Agency	
State / Location	NC

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TCE by 8260	TCE by 8260	Large Coolers	Trip BLANK	Residual Chlorine (Y/N)	
1	FD-18	P	G			4/3/18	00:00		2	2									X					92375548
2	MW-12 (prod)	P	G			4/3/18	1430		2	2									X					013
3	MW-14 (prod)	P	G			4/3/18	1500		2	2									X					014
4																								015
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Level 4 Data Package		4/4/18	1355		4/4/18	13:55	5.9	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ATTACHMENT 6

GROUNDWATER AND LNAPL DATA VALIDATION REPORT

DATA VALIDATION REPORT
ERH Interim Remedial Action Baseline Groundwater and LNAPL Sampling
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

Introduction

Groundwater and light non-aqueous phase liquid (LNAPL) samples were collected at the CTS of Asheville, Inc. Superfund Site (Site) in Asheville, North Carolina, in March and April 2018 and submitted for off-site laboratory analysis. Aqueous groundwater samples were analyzed by Pace Analytical Services, Inc., located in Huntersville, North Carolina. The LNAPL samples were analyzed by Pace Analytical Services, Inc., located in Peachtree Corners, Georgia. Results were reported in the following Sample Delivery Groups (SDGs): 92379074 and 92379548.

A listing of samples included in this Data Validation Report is presented in Table 6.1. Data were evaluated using project quality control limits summarized in Table 6.2. A summary of the final validated analytical results is presented in Table 6.3. Samples were analyzed by the following method:

- Volatile organic compounds (VOCs) by USEPA Method 8260B (trichloroethene only)

Data validation was completed based on general procedures in the USEPA Region 4 Data Validation Standard Operating Procedures (SOP) for Organic Analysis (USEPA, 2016), Method 8260B, and the CTS of Asheville Quality Assurance Project Plan (QAPP) [Amec Foster Wheeler, 2018]. Data validation included the following evaluations:

- lab report narrative
- sample collection and chain of custody
- data package completeness
- holding times
- instrument tuning
- initial and continuing calibrations
- QC blanks
- system monitoring compound recovery
- laboratory control samples
- laboratory duplicates
- field duplicates
- internal standard response and retention time
- data transcription
- raw data and calculation checks
- electronic data reporting
- data qualification

The following laboratory or data validation qualifiers are used in the final data presentation:

U = target analyte is not detected at the reported detection limit
J = estimated value

Results are interpreted to be usable as reported by the laboratory unless discussed in the following section.

Data Validation Results

Data validation observations are discussed below.

Instrument Tuning

The tuning criteria provided by Pace match the tuning criteria listed in Method 8260. Tuning results were also compared to USEPA Region 4 control limits during data validation. Instrument tune results for all mass/charge (m/z) ratios were within control limits for percent relative abundance as stated in Method 8260 and in the USEPA Region 4 SOP for all instrument tunes.

Field Duplicates

A summary of field duplicate results is presented in Table 6.4. Good agreement was observed for all target analytes in field duplicate pairs MW-26/FD-16, MW-30/FD-17, and MW-12(prod)/FD-18. Relative percent differences (RPDs) between results were less than the QAPP specified control limit.

References

Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec), 2018. "Electrical Resistance Heating Remedial Action Work Plan; Appendix C Quality Assurance Project Plan;" January 17, 2018.

USEPA Region 4, 2016. "Data Validation Standard Operating Procedures for Contract Laboratory Organic Data Using Gas Chromatograph/Mass Spectrometer and Gas Chromatograph/Electron Capture Detector"; Science and Ecosystem Support Division, Quality Assurance Section, QAS-SOP-0025, Revision 0.0, 2/16/2016.

Data Validator: Julie Ricardi

Julie Ricardi

Date: 5/10/2018

Reviewed by Chris Ricardi, NRCC-EAC

Chris Ricardi

Date: 5/11/2018

TABLE 6.1
Data Validation Report: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Sample Delivery Group	Sample Location	Field Sample ID	Sample Date	Lab ID	QC Code
92379074	MW-2	MW-2	03/29/18	92379074003	FS
92379074	MW-25	MW-25	03/30/18	92379074011	FS
92379074	MW-25A	MW-25A	03/30/18	92379074012	FS
92379074	MW-26	MW-26	03/29/18	92379074005	FS
92379074	MW-26A	FD-16	03/29/18	92379074002	FD
92379074	MW-26A	MW-26A	03/29/18	92379074006	FS
92379074	MW-27	MW-27	03/29/18	92379074004	FS
92379074	MW-28	MW-28	03/30/18	92379074009	FS
92379074	MW-28A	MW-28A	03/30/18	92379074010	FS
92379074	MW-29	MW-29	03/29/18	92379074007	FS
92379074	MW-29A	MW-29A	03/30/18	92379074008	FS
92379074	QC	TB-14	03/29/18	92379074001	TB
92379548	MW-12	FD-18	04/03/18	92379548013	FD
92379548	MW-12	MW-12(prod)	04/03/18	92379548014	FS
92379548	MW-14	MW-14(prod)	04/03/18	92379548015	FS
92379548	MW-23	MW-23	04/02/18	92379548005	FS
92379548	MW-23A	MW-23A	04/02/18	92379548006	FS
92379548	MW-24	MW-24	04/02/18	92379548003	FS
92379548	MW-24A	MW-24A	04/02/18	92379548004	FS
92379548	MW-3	MW-3	04/02/18	92379548007	FS
92379548	MW-30	FD-17	04/03/18	92379548002	FD
92379548	MW-30	MW-30	04/03/18	92379548008	FS
92379548	MW-30A	MW-30A	04/03/18	92379548009	FS
92379548	MW-31	MW-31	04/03/18	92379548010	FS
92379548	MW-31A	MW-31A	04/04/18	92379548012	FS
92379548	MW-32	MW-32	04/04/18	92379548011	FS

QC Codes:
FS = Field sample, FD = Field duplicate, TB = Trip blank

Prepared By: WCG 5/2/18
Checked By: JAR 5/5/18

TABLE 6.2
Data Validation Report: Project Quality Control Limits
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Parameter	QC Test	Water %R	Water RPD
VOC	Surrogate	70-130	---
	LCS/LCSD	70-130	30
	MS/MSD	70-130	30
	Field Duplicate	---	30

Notes:
LCS = laboratory control sample
LCSD = laboratory control sample duplicate
MS = matrix spike
MSD = matrix spike duplicate
%R = percent recovery
RPD = relative percent difference

Prepared By: JAR 5/10/18
Checked by: CSR 5/11/18

TABLE 6.3
Data Validation Report: Summary of Analytical Results (Groundwater and LNAPL)
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

		Sample Delivery Group	92379074		92379074		92379074		92379074		92379074		92379074	
		Sample Location	MW-2		MW-25		MW-25A		MW-26		MW-26A		MW-26A	
		Sample Date	3/29/2018		3/30/2018		3/30/2018		3/29/2018		3/29/2018		3/29/2018	
		Field Sample ID	MW-2		MW-25		MW-25A		MW-26		FD-16		MW-26A	
Method	**Parameter**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
EPA 8260B	Trichloroethene	ug/L	3,140		12,000		24,900		28,800		8,040		7,420	

		Sample Delivery Group	92379074		92379074		92379074		92379074		92379074		92379074	
		Sample Location	MW-27		MW-28		MW-28A		MW-29		MW-29A		QC	
		Sample Date	3/29/2018		3/30/2018		3/30/2018		3/29/2018		3/30/2018		3/29/2018	
		Field Sample ID	MW-27		MW-28		MW-28A		MW-29		MW-29A		TB-14	
Method	**Parameter**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
EPA 8260B	Trichloroethene	ug/L	9,620		1,940		51,300		1,950		40,400		1	U

		Sample Delivery Group	92379548		92379548		92379548		92379548		92379548		92379548	
		Sample Location	MW-23		MW-23A		MW-24		MW-24A		MW-3		MW-30	
		Sample Date	4/2/2018		4/2/2018		4/2/2018		4/2/2018		4/2/2018		4/3/2018	
		Field Sample ID	MW-23		MW-23A		MW-24		MW-24A		MW-3		FD-17	
Method	**Parameter**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
EPA 8260B	Trichloroethene	ug/L	13,900		21,700		8,130		44,900		15,000		6,390	

		Sample Delivery Group	92379548		92379548		92379548		92379548		92379548	
		Sample Location	MW-30		MW-30A		MW-31		MW-31A		MW-32	
		Sample Date	4/3/2018		4/3/2018		4/3/2018		4/4/2018		4/4/2018	
		Field Sample ID	MW-30		MW-30A		MW-31		MW-31A		MW-32	
Method	**Parameter**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
EPA 8260B	Trichloroethene	ug/L	6,410		26,600		772		8,690		2,590	

		Sample Delivery Group	92379548		92379548		92379548	
		Sample Location	MW-12		MW-12		MW-14	
		Sample Date	4/3/2018		4/3/2018		4/3/2018	
		Field Sample ID	FD-18		MW-12(prod)		MW-14(prod)	
Method	**Parameter**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
EPA 8260	Trichloroethene	mg/kg	5,650		6,270		10,200	
Pace SOP 204	Percent Moisture	Percent	25.7		35.4		33.6	

Notes:
mg/kg = milligrams per kilogram
ug/L = micrograms per liter
Qualifier:
U = not detected at the detection limit

Prepared By: WCG 5/8/18
Checked By: JAR 5/8/18

TABLE 6.4
Data Validation Report: Field Duplicate RPD Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Amec Foster Wheeler Project 6252-16-2012

Field Sample ID	Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD (%)
MW-26A	FD-16	Trichloroethene	7,420	8,040	8
MW-30	FD-17	Trichloroethene	6,410	6,390	0
MW-12	FD-18	Trichloroethene	6,270,000	5,650,000	10

Notes:
1. Concentrations are in micrograms per liter (ug/L).
2. RPD - relative percent difference (between duplicate results).

Prepared By: JAR 5/23/18
Checked By: CSR 5/23/18